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Isaac Langton

NEW OBSERVATIONS ON THE Natural Hiſtory OF THIS World of MATTER, AND THIS World of LIFE:

In Two Parts.

Being a Philoſophical Diſcourſe, grounded upon the Moſaick Syſtem of the Creation, and the Flood.

To which are added

Some Thoughts concerning Paradiſe, the Conflagration of the World, and a Treatiſe of Meteorology: With occaſional Remarks upon ſome late Theories, Conferences, and Eſſays.

By THO. ROBINSON *Rector of* OUSBY *in* CUMBERLAND.

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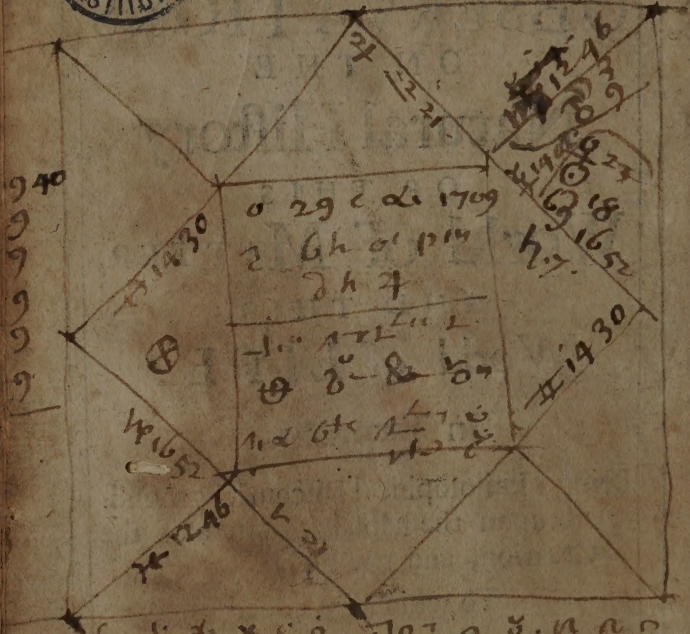

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To the Reverend

Mr. *William Nicholſon*

Arch-Deacon of *CARLISLE.*

REVEREND SIR,

I Have read over the Books you were pleaſed to lend me, (*viz.*) Dr. *Burnet*'s Theory of the Earth, and Dr. *Woodward*'s Eſſay toward a Natural Hiſtory of it: Both which entertain'd me with a great many new and very notable Hypotheſes, managed with a great deal of Art, Ingenuity and Learning; but in my Opinion very ill grounded; many of their Notions being inconſiſtent with common Senſe and Experience, with Scripture and Reaſon;

eſpecially the Moſaick Account of the Creation, Paradiſe, and the Univerſal Deluge ; and in ſome Particulars, Dr. *Woodward* ſeems inconſiſtent with himſelf.

Theſe following Chapters, (which I make bold to preſent to your Hand, and to give you the Trouble of peruſing) will ſhew you wherein I cannot concur with theſe great Virtuoſo's, and why I endeavour to eſtabliſh a quite different Notion of things ; and do ground it upon ſuch Philoſophical *Theſes*, as *Moſes*, that great Philoſopher, has laid down as ſo many *Poſtulata* in his ſhort, but moſt comprehenſive Syſtem of the Creation; the whole being a ſhort and compendious Deſcription of this World of Matter, and this World of Life wherein we live.

SIR; I am ſo far from being big with a fond Conceit of any of theſe Notions, that I dare not truſt them in any Hands but yours; for I am unwilling that theſe Papers (without your Approbation and Encouragement,) ſhould go further abroad than your Study, leſt ſome ill-natur'd and peeviſh Critick ſhould take occaſion to expoſe the Ignorance and Diſingenuity of their Author.

I know (Sir) that the Experience you have lately gain'd by ſearching into thoſe occult Regions of Matter, being now added to your former Speculations about it; has made you the moſt capable of determining all Differences, and ſolving the moſt difficult *Phænomena* of this Kind. If you will be pleas'd therefore to correct with your Pen the Miſtakes you meet with in any of theſe Notions, and let me have your honeſt and impartial Opinion of them, you will further oblige,

Sir,

Your moſt affectionate

and humble Servant,

THO. ROBINSON.

To

TO THE

Gentlemen Miners.

GENTLEMEN,

IF *his* Obſervation *be true, That no Man can* loſe *by the* World; *but what he* loſeth *in Purſe, he gains in* Experience: *You will have no Reaſon to complain, if ſometimes your ſubterranean* Projects *miſcarry upon your Hand: Since that Loſs may eaſily be Repaired by your* experimental Knowledge, *of thoſe* occult Regions *of Matter; concerning which, the moſt profound* Philoſopher *can give no Account, but by way of* Hypotheſis *and* Conjecture.

Solomon, *that great Maſter of* experimental Knowledge, *tells us that*

Wiſdom *is better than* Rubies; *and all the things that may be deſired are not to be compared to it. And tho' that by Wiſdom he may mean that* Divine Philoſophy *which the* New Teſtament *calls* Religion; *yet certainly there is nothing contributes more towards making one* morally *or* phyſically wiſe, *than* Experience, *as he intimates in the following Verſe, where he brings in* Wiſdom *thus ſpeaking:* Prov. 8. 11. *I* Wiſdom *dwell with* Prudence, *and find out the Knowledge of* witty Inventions. *I confeſs that the* Theorick *Part of* Philoſophy *(being the firſt-born,) is more noble; and therefore deſervedly ſits Regent in the ſuperior Faculties of the Soul: Attended with* ſublime Notions *and* Speculations; *and ſometimes* Figments *and* Chimæra's *are alſo her Maids of Honour.*

And altho' the practick or experimental

mental Part, ſits below in humble Garb, attended only with mechanick Artificers, *and* manual Operators: *Yet ſhe oftentimes Entertains the World with more of Certainty, and Demonſtration than the former.*

Gentlemen, *I ſhall not complement you into a good Opinion of theſe* Notions *which I am willing ſhould abide the Teſt of an impartial Judgment; only I think it may be convenient to let you know that they are the product of* 20 *Years Experience and Obſervation; for ſo long I have been concerned in the Inſpection of under-ground Works of ſeveral Kinds.*

Beſides the Place of my Habitation being under Crosfell, *(one of the higheſt Mountains in* England *) whoſe lofty Top gives a large Proſpect both of the Eaſt and West Seas; I have from thence obſerved, not only the different* Claſſes *of Matter, the* Eruption *of*

Rapid Springs; but alſo the Riſing and Falling as well as the Rarefaction and Condenſation of Vapours.

Gentlemen, *If the Publication of this ſhort Treatiſe (which I preſume to preſent to your Hand, as the moſt proper* Patrons *of* ſubterranean Philoſophy*) put you to the Charge of an eaſie purchaſe, you will certainly have it much cheaper than the* Author, *who ſhall always remain,*

GENTLEMEN,

Ousbys, April the 16.
(1696.)

Your moſt humble Servant

and Well-Wiſher,

THO. ROBINSON.

THE

PREFACE.

IF the learned Authors of the new Theories and Eſſays had but taken the Pains to have conſider'd better of thoſe great Advantages of Learning and Education which *Moſes* (the greateſt Philoſopher that ever was in the World, and the firſt Deſcriber of its Creation) had beyond any of thoſe learned Philoſophers of later date, who have writ upon the ſame Subject; they would have entertain'd a greater Veneration and Eſteem for his ſhort, but moſt comprehenſive Syſtem; than for the larger Volumes of thoſe common Philoſophers and Hiſtorians, whoſe Writings are only the Product of their own natural Reaſon; though ſet off with the greateſt Artifice of Words, and Advantages of human Learning.

The firſt Progreſs which this great Philoſopher made in human Learning and Wiſdom was in *Pharoah*'s Court, where he had his Education, under the Tuition of his own Daughter, who having no Child of her own, deſign'd to adopt him her Son, and make him Heir apparent to that Crown: To which End he was by her Care inſtructed in all the Learning, Wiſdom, and Philoſophy of the *Egyptians*: And no doubt but ſome of the moſt learned amongſt the Hierophanthæ, who were the moſt skilled in the Knowledge of myſtical as well as natural Philoſophy, were his Tutors.

He being thus qualified with the beſt Learning *Egypt* could then afford, the ſecond Improvement he made was in the Family of his Kinſman *Jethro*, who being as well a Prieſt as Prince of *Midian*, did not only diſcipline him in all the Rules of Policy, Conduct, and Government; by which he was fitted and prepar'd for being Captain General of that mighty Hoſt of the *Hebrews*, which God deſign'd to deliver from the *Egyptian* Yoak, and under his Conduct to ſettle in *Canaan*; but alſo he was inſtructed by him in the Religion of his Anceſtors, the Patriarchal Traditions concerning the Creation of the World, the Beginnings of things, and the Genealogies of Men; which being beſt known to *Adam*, who coming immediately out of

God's Hand, did undoubtedly deliver it to his Son *Seth*, *Seth* to *Enos*, and ſo from Father to Son, to *Abraham*, from whom *Jethro* deſcended by a ſecond Marriage.

During his Time of Reſidence in *Midian*, which was forty Years, and moſt of that Time being ſpent in Contemplation: Its generally believed he wrote this Syſtem of the Creation, with the reſt of his Book called *Geneſis*, by the Aſſiſtance and Direction of his Father-in-Law, who could not be ignorant of the Patriarchal Traditions; himſelf being deſcended from a Patriarch of ſpecial Note.

After theſe Gradations and Improvements in all Kinds of humane Learning, Wiſdom and Philoſophy, God took him into his own Service, and was pleaſed by a ſort of Perſonal Communication to impart to him as well the manner how all things began to exiſt, as how the Manners of Mankind were to be exerciſed; ſo that he may be reaſonably ſuppoſed to found the Authority of his Writings, as well as of his Government over God's People, upon Divine Revelation.

In this moſt excellent Syſtem, Philoſophy, Divinity and Myſtery, ſeem to be ſo cloſely interwoven that it wou'd be a Matter of great Difficulty (if not Impoſſibility) for any, unleſs ſuch as are well skill'd in the Cabaliſtical Traditions and Mythology, to unravel the Contexture and diſtinguiſh its parts. And ſome of the moſt learned Rabbies are of opinion that God directed *Moſes*, and the reſt of the holy Pen-Men, frequently to make uſe of Metaphors, Allegories, and other Schematical Forms, which muſt needs be attended with ſome Darkneſs and Obſcurity (theſe being as it were a Veil drawn over the Face of Divine Truth) and this might occaſion *Solomon* to joyn the *Words of the Wiſe*, and their *dark Sayings* together.

And this was not only the Practice of the ſacred Writers; but of the learned Heathens, eſpecially their Prieſts and Philoſophers; who undoubtedly did imitate *Moſes* herein: but for different Ends and Purpoſes; for it did highly concern the Pagan Prieſts to hide and conceal their Myſteries from the Light; which like baſtard Eagles would not endure the Tryal of it.

But the holy Spirit might direct the holy Pen-men to obſerve their Style for Reaſons of greater and more weighty Moment.

For the Divine Wiſdom might ſee it fit in the Infancy of the World, to diſcover his Will and Mind in ſome things very ſuitable to the Capacities of the Men of that Age: And to reſerve other things of great moment veil'd under Allegories, and myſtical Expreſſions until the Minds of Men were more opened and enlarged; for diſcovering of thoſe brighter Beams of Divine Truth.

Yet that the Glories that were after to appear might not be wholly clouded; he order'd it ſo, that ſuch a thin Veil ſhou'd be drawn over the Matter, as ſhou'd not more ſet off the Beauty, than ſtir Men up to a diligent Search after thoſe Divine Truths.

If then a modeſt Attempt be made to ground a Philoſophical Diſcourſe upon ſome of theſe veiled Myſteries, with Submiſſion to Men of greater Learning, and better skill'd in myſtical Philoſophy: I preſume that it will not be judg'd an Effect either of Pride or Vain-glory.

Preliminary Poſtulata.

I *Know that it's much out of Faſhion to beg Principles in this Philoſophizing Age; yet conſidering that this Schematical Account which* Moſes *has given of the Creation is as well Philoſophical and Myſtical, as Hiſtorical and* ad hominem, *I preſume that theſe following* Poſtulata, *being grounded upon ſuch reaſon, as cannot be denyed, will eaſily be granted me; as firſt---.*

That this Natural World was created in a Natural Way, by the Agency of ſecond Cauſes; God Almighty concurring with them by his Direction and Approbation in theſe Words (He ſaw that it was good.) 1.

2. *That the work of the Creation cou'd not, in a natural way, be compleated in ſo ſhort a time as ſix days; for as it cannot be eaſily imagined that all the Solid Strata and Beds of Iron cou'd be digeſted into ſuch good order, as we find them in; and receive their ſeveral Degrees of Conſolidation in that time: Neither can it be Suppos'd that all theſe different natures in the Vegetative and Animal Sphere of life ſhou'd grow up to ſuch a degree of Perfection, that Adam cou'd eat Ripe fruit in Paradiſe of ſix days Production: And that all the Beaſts of later birth cou'd in that time get Strength to appear before him.*

3. *It may then be taken for a granted* Principle, *that by the ſix days work is meant the ſix diſtinct* Productions*; and by the Evening, and the Morning, is meant the* Principles *of Activity and* Paſſivity, *which were the Inſtrumental Cauſes of theſe* Productions.

That Paradiſe in a literal ſenſe may ſignify a local place or Garden of Pleaſure, in a Philoſophical ſenſe all thoſe Rational and Senſual Pleaſures our Natures are capable of in this Material World: In a Myſtical ſenſe it ſignifies Heaven, or thoſe Intellectual Pleaſures our Natures ſhall be capable of when they are Spiritualiz'd and Exalted. 4.

That Adam *and* Eve *in a literal ſenſe ſignify the firſt Individual Perſons that were of that Species. In a Philoſophical Senſe, they ſignify a Generation of Men, and Women; in a Myſtical ſenſe, they ſignify Reaſon and Senſe, or the Superior, and Inferior Faculties of the Soul.* 5.

That by the Serpent *in a literal Senſe is ſignified a ſubtile inſinuating Brute, whoſe ſpeckled Skin (being beautified with all the Variety of Natural Paint) made it a fit Object to work upon the viſive Faculty; in a* 6.

Philo-

Philoſophical Senſe, it may ſignifie natural Concupiſcence: And, in a myſtical Senſe, it may ſignifie the Devil.

7. *By the* Tree of Life, *in a literal Senſe, may be ſignified an individual Tree producing Fruit, and preſerving Life. By the* Tree of Knowledg *in a literal Senſe, may be underſtood a Tree bearing Fruit of a poiſonous Quality, and deſtructive of Life; in a Philoſophical Senſe they may ſignifie the whole Species of Vegetables, both of a wholeſome and poiſonous Nature; in a myſtical Senſe they may denote eternal Life and eternal Death.*

8. Adam's *giving of Names to the Beaſts ſignifies the Exerciſe of his natural Reaſon, by diſtinguiſhing of their Natures.*

9. *Laſtly, by* Eve's *eating of the forbidden Fruit, may be underſtood the Deſire of natural Concupiſcence; to gratifie her Senſes with their beloved Objects.*

Ad-

ADVERTISEMENT WITH *Additional Remarks.*

SInce the writing of the following Diſcourſe, a *new Theory of the Earth* hath been publiſh'd by a thoughtful young Divine, who agrees in ſome Notions with me; this therefore is to aſſure the Reader, that my Manuſcript laid all the laſt Winter in *London*, and was printed off before I had a Sight of the aforeſaid Book, which ſeveral of my Friends can teſtifie (if there ſhould be occaſion) thro' whoſe Hands theſe Papers have paſſed.

Another thing ought to be taken notice of, and that is my referring ſeveral Hypotheſes and Obſervations to a late *Writer* (a Fault which Mr. *Whiſton* hath committed up and down his Book) who it ſeems hath taken them from others; which I accidentally diſcover'd by falling upon the *Monthly Miſcellany Letters, Vol.* 1. *Numb.* 22. *Pag.* 561, 566. *Vol.* 2. *Numb.* 2. *Pag.* 49. *to* 57. *As alſo the Philoſophical Tranſactions of the Royal Society. Numb.*

219. *from p.* 181. *to* 201. of which 'tis but juſt to give ſome Inſtances; for a tender regard ought to be had for the Original Inventors of things, who ought not to be robb'd of the Fruits of their Labours and Studies by Pyratical Rovers, who ſet up for *ſtupendous* and *miraculous Diſcoverers.* Turn to this *Eſſay*, *Pag.* 33. The Origine of Mountains from the Diſruptions and Changes of the *Strata* of the Earth was *Steno*'s Opinion. See his *Prodrom to a Diſſertation concerning the Changes of the Earth.*

Pag. 40. 75, 76, 77. The ſame *Steno*, in his *Prod.* places about the central Fire of the Earth, a huge Sphere or Abyſs of Waters; which, according to him, ſupplies the Earth with Springs, the Air with Vapours, and was ſufficient for the general Deluge, when by the Force of the ſubterraneous Fires, it was thruſt and forced up, whereby the Globe was broken to pieces, and diſſolv'd in the vaſt Fluid.

Pag. 61. 62. The perpendicular and horizontal Fiſſures of the Earth, dividing the Strata or Beds of Sediments, are with great Care and Accuracy delineated and deſcribed by Dr. *Steno in his*

Prodrom, and many other *Phenomena* relating to the Hiſtory of the Earth, are explain'd at the End of his *Anatom. canis carchar. in his ſpecim. myolog.*

Pag, 76, 86, 88. The reſetling or ſubſiding of Bodies, as well terreſtrial as marine (diſſolv'd or mix'd with the Waters of the Deluge) according to the Laws of ſpecifick Gravity in their ſeveral Strata or Beds of Stone, Sand, Clay, Marle, Slate, Lime, Chalk, *&c.* was publiſh'd above 26 Years ago, by *Nicholas Steno*, and *Agoſtino Scilla*; if the aforemention'd Accounts in the *monthly Miſcellan. Letters*, and the *Philoſophical Tranſactions* are to be rely'd upon; the Books themſelves being not to be come at in a remote Province. This *Stenonian Hypotheſis* of the Formation of the * preſent

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* Note, that *Steno* proves the Earth to have been twice fluid, twice plain and dry, twice ſcabrous and craggy; the firſt was at the original Chaos, the ſecond at the Flood; *This* (ſays he) *is manifeſt from ſome Beds of the higher Hills, containing no Heterogeneous Bodies, becauſe form'd before there were any Animals or Plants, or other mix'd Solids; and ſo preſerv'd in their ſimple antediluvian State by the Heighth of their Situation, which might ſecure them againſt the Load of many adventitious or factitious Beds, falling for the moſt part on the Vallies and low Places, where they make up all the compound Strata, which incruſt the preſent Earth, and ſeparate it from the primitive one, whoſe Beds are more ſimple, not ſtuffed up with ſuch different Bodies as make up the poſtdiluvian Strata, or Sediments.* This agrees with what Mr. *Whiſton* delivers in many Places of his *New Theory*. To which we may add that the ſimple antediluvian Beds on the high Mountains, deſtitute of Heterogeneous Solids, may be laid open by the waſhings away of the incumbent Diluvian Sediments or compound Beds, by the Torrents of Rains, which carry down thoſe Cruſts and Bodies along with them.

ſent Earth out of the ſeveral Beds or Sediments of Matter mix'd with, and ſinking down from the Waters of the general Flood according to the Affinity and Weight of Parts is much oppos'd by *a late Author of two Eſſays from* Oxford, who cannot believe the Deluge to have been univerſal, nor the whole Earth planted with Animals from *Noah*'s Ark, whoſe Arguments I do not approve of, being inconſiſtent with true Philoſophy, and Divinity: Neither is Dr. *Nichol*'s ſecond Creation of Animals after the Flood to be allow'd of, being contrary to the Deſign of *Noah*'s *Ark*, and to the whole Moſaick Narration.

As to my Opinion concerning the Origine of foſſil Shells, of form'd Stones, and ſubterraneous Plants; *Scilla* himſelf, tho he with *Steno* has taken great Pains to prove them to be the Exuviæ or Spoils of Animals and Vegetables (from the Similitudes of their Parts in every particular) and to be the Remains of the Deluge ſubſided and lodg'd in ſeveral Beds, Layers, or Sediments; yet I find by Dr. *Liſter*, that *Scilla* own'd ſome ſorts of them to be of another Original, and the learned Dr.

himſelf proves beyond all contradiction, that real perfect Shells are frequently found in the Bladder, Kidneys, Imposthumes, and other Cells of Animal Bodies; and if ſo, why need we force them into the midſt of Quarries and Rocks by diſſolving the whole Frame of Nature for their Sakes?

If true Shells can be form'd within Stones of the Bladder, and in many other Parts of the Bodies of Creatures; then by the ſame Argument a Million may be form'd in the Bowels of the greater World, every ways reſembling thoſe of the Sea, in *Striæ*, *Lamellæ*, *Faſciæ*, Tendons, Threds, *&c.* ſo that they might perſwade *Steno*, Dr. *Hook*, *Boccone*, *Scilla*, *Columna*, and Mr. *Ray*, that they were really the very ſame, owing their Original to the Flood, or Chaos, or Earthquakes.

My Hypotheſis concerning the Generations of ſeveral Animals is much confirm'd by the learned and experienced *Father Buonani* in his late *Obſervations circa viventia in non viventibus reperta*; who maintains equivocal Generation from many clear and undoubted Proofs.

For, *Pag.* 151. to *Pag.* 166. compare *Huetius* and *Bochart de Paradiſo.*

Pag. 189, 191. Some great Natural Philoſophers will have the *Ignes Fatui* to be flying Gloworms, or ſome other ſhining Inſects.

Pag. 205. See more of the Figures and Phenomena of Snow and Hail in *Barthol. de Nive, Hook's Micrography, Boyle of Cold, Marten's Greenland Voyage, Lewenhoeck's Letters.*

As for Mr. *Whiſton's New Theory*, I am afraid it will be found altogether inconſiſtent with the *Moſaick Hiſtory*, being adapted only to the formation of our little Globe, without taking in the Heavens (which *Moſes* is particular in) and depending too much upon mechanical & neceſſary Laws (as ſeveral other late *Theorys* and *Hypotheſes* do) whereby the Flood and Conflagration might be brought to paſs without any Relation to the Fall of Man or Sin. For *Comets* and Eruptions of boyling *Abyſſes* may frequently deſtroy our Globe, by ſuch Chains of Natural Cauſes; *Comets* by the Laws of Trajection may daſh and drown us with their Tails, and the central Fire may drive up the vaſt *Abyſs* upon us, whether we ſin or no; theſe *Phenomena* may befall the Moon and all the Planets, without any reſpect to Inhabitants, and may happen frequently by ſuch Concourſes and Links of Mechaniſm, and by the ordinary Laws of Motion. Therefore we ought to be cautious of making ſuch Grand *Revolutions* to rowl upon Machines, as well as on the other hand of coining new Miracles and ſecond Creations without any Warrant from Scripture; of the firſt I am afraid the *ingenious Mr. Whiſton* is too guilty; and of the latter the learned Dr. *Nichols*. But conſidering we are in a Country of Liberty, and in an Age of Thought and Obſervation, I can eaſily pardon the Freedom they are pleas'd to take in their Studies and Enquiries.

Having lately met with an accurate Diſcourſe of *Bernardini Ramazzini*, printed 4 Years ago in *Quarto*, concerning the ſubterraneous Waters, the ſeveral Layers or Beds of Earth upon deep diggings, the foſſil Shells, Bones, Vegetables, Pavements, *&c.* as alſo upon Inundations, and Deluges, with their Effects, I thought fit here to acknowledg the many Obligations we owe to that *inquiſitive*

inquiſitive Phyſician for his various Obſervations on the Changes of the Earth about the Territory of *Modena*, which are equally commendable with thoſe of *Columna* upon *Apulia*; Dr. *Hooke*, Mr. *Ray*, Dr. *Plot*, and Dr. *Liſter* upon *England*; *Steno* upon *Tuſcany*; *Scilla* and *Boccone* upon *Sicily* and *Malta*; to whoſe Diſcoveries little hath been added as yet, notwithſtanding the high and mighty Pretences of a late *Author*; who, in an *Eſſay toward a Natural Hiſtory of the Earth*, *Pag.* 37. throws Dirt upon thoſe very *Gentlemen*, from whoſe Writings he hath made bold to borrow the beſt Part of the Obſervations in his Work: 'Tis alſo remarkable, how, *Pag.* 249, 252, 255, 256, 257, 259. he falls foul upon a very famous and reverend *Divine* for taking the ſame Philoſophick Liberty, which he himſelf aſſumes in many Places of his *Eſſay*. As for his darling Notion (though none of his own) of *Specifick Gravity*, 'tis notoriouſly falſe in Fact and Nature, for the Strata, Layers, or Beds of Sediments (out of which *Steno*, *Scilla*, *Grandius*, *Ramazzini*, and *others*, will have the Earth made up) do not lie according to their different Weights, or according to the Statick Laws of deſcent of Solids in Fluids; for the Strata of Marble, and other Stone, of Lead, and other Metals, lye often near the top or Superficies, having many lighter Strata under them; and if all the Strata thro the whole Globe could poſſibly be viewed and examined, I am confident the reſpective Order of ſpecifick Gravity would not hold in any two together; and who can fancy, that the Parts of Ferns, Moſſes, and other Plants, of Shells, Teeth, and other Bones, ſhould equiponderate with thoſe of Metallick Foſſils; nay, oftentimes ſubſide below them; and whoever views the Dimenſions, Weight, Figure, and Place of thoſe vaſt Natural Columns, call'd the *Devil's Cauſy in Ireland*, will be ſoon convinced of the Weakneſs of this *Hypotheſis*. Their Origine therefore muſt be accounted for ſome other way than what *Columna*, *Steno*, *Scilla*, *Boccone*, *Grandius*, and others copying after them, have deliver'd concerning the Deluge and Inundations, Strata, Cruſts, or Sediments according to the Laws of Specifick Gravity; neither are the many Phenomena relating to their Situation, explicable by any *Theories of the Earth* as yet publiſh'd; I know not what Dr. *Hooke* may do when he comes to print his Lectures upon this Subject, which the *Virtuoſi* expect, and very earneſtly crave of him: Much alſo may be perform'd by the Learned Mr. *Edward Lhwyd*, Keeper of the *Oxford Muſeum*, who hath been very diligent and accurate in his Obſervations on theſe Bodies, and whoſe Candor and Modeſty, joyned with his exquiſite Judgment, render him capable of ſuch an Undertaking.

As to the Origine of ſubterraneous Plants, either digg'd out of Earthen Beds, or lodged within Stony Subſtances, or elſe impreſs'd upon them, which *Steno* in his *Prodroms* (tranſlated by Mr. *Oldenburgh*) *Pag.* 93, 94, 95. will needs derive the ſame way with thoſe of Shells, Teeth, Bones, and other Parts of Animals, buried in the like Strata or Sediments of the Deluge; Mr. *Lhwy'd* of *Oxford* has rais'd many invincible Objections againſt this *Stenonian Hypotheſis* in the laſt Edition of *Camden's Britannia*, *Pag.* 692, 693. and Mr. *Ray* in his ſecond Preface to the *Synopſis of Britiſh Plants*, argues very Philoſophically againſt this Opinion, reviv'd of late with great Aſſurance, and in a poſitive manner; but Mr. *Whiſton* hath done very wiſely in taking no notice of the many inſuperable Difficulties which have been urg'd againſt the bringing in of theſe Bodies, and the forming our preſent Cruſts and Layers of Earth, out of a *general Deluge.* He hath ſaved himſelf much Sweat and Pains in having Recourſe only to two or three *late Books*, and in conſulting *Copies* inſtead of *Originals*, which would have given more Strength and Beauty to his Work, and would have look't more maſterly; however the *Gentleman* hath perform'd very well in the main, and hath ſhewn a profound and clear Knowledge in Phyſical Science, though not in the Hiſtory of Learning, nor in that of Nature. His Conjectures are admirable, but his Quotations and References are not commendable, being injurious to thoſe eminent *Philoſophers* who were the firſt Inventors, and yet paſſed over in Silence, as though there had been no ſuch *Writers*; many of their Obſervations being attributed by the *Author of the New Theory* *ry* to *one* of his own Acquaintance, who may do as much for him another time; but I would not willingly accuſe Mr. *Whiſton* of any ungenerous dealing, having diſcover'd a noble Genius in the Formation of his Syſtem; and therefore I conclude with reſpect to him, and with Charity to all Mankind.

The Contents of the firſt Part.

CHap. 1. *The Philoſophical meaning of theſe Words* (In the beginning God created the Heavens and the Earth,) *and what may be concluded from them.*

Chap. 2. *Of God the ſupream and efficient Cauſe; and why* Moſes *proves not the Being of a God expreſly by way of Argument; but implicitly by deſcribing of the ſeveral Degrees of Perfection, and the Subordinations of Life.*

Chap. 3. *Of the Creation of ſecond Cauſes, and the manner of their Production, and ways of working.*

Chap. 4. *Of Light and Darkneſs, the common Principles of mix'd Bodies, what they were in Maſs; and how their Diviſion made the firſt Production.*

Chap. 5. *Of Light the formal Cauſe of all mix'd Productions; what it was whilſt in Maſs.*

Chap. 6. *Of Darkneſs, the material Cauſe of all mix'd Productions; what it was in Maſs, how it was reduc'd into Form:*

Of the Power of Matter and Motion: Of Sympathy and Antipathy.
Chap. 7. Of the Spirit of God moving upon the Face of the Waters, what is philoſophically meant by it: Of the firſt diviſion of the Waters, and the clearing of the ſublunary Firmament.
Chap. 8. The Diviſion of the lower Waters into ſubterranean, ſuperterranean, and nubiferous, and by what Gradations the dry Land appear'd.
Chap. 9. Of the Primeval or Antediluvian Figure of the Earth.
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Chap. 12. Of Mountains, their original Cauſe, conſiſtences, and natural Uſes; being the firſt dry Land that appear'd.
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Chap. 14. Of the Plains and Valleys, &c.
Chap. 15. Of the Channel of the Sea, &c.
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of Nature in this Material World, &c.
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Chap. 19. *Of terrene Damps, and their dreadful Effects upon this* Globe, &c.
Chap. 20. *Of* Noah's *Flood, its Cauſes, the Seaſon of the Year when it happen'd, the Effects and Alterations it made upon the Earth.*
Chap. 21. *Of the ſeaſon of the Year when the Deluge happen'd.*
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The Contents of the ſecond Part.

CHap. 1. *Of the Plaſtick Spirit in Matter, and its natural Products.*
Chap. 2. *Of the grand Cover of the Earth, the ſympathetical Union of the plaſtick and vivifick Spirit; and the Production of Vegetables, the firſt and loweſt Degree of Life.*
Chap. 3. *Of reducing the confus'd Maſs of Light or the etherial Flame into a Body,*

dy, which made the Sun; of reducing thoſe lighter Fogs and wateriſh Miſts into a Body, which made the Moon; how by clearing of the ſuperlunary Firmament, or the Planetary Spheres, the Stars appear'd, and what the Sun, Moon, and Stars contribute towards the Production of ſenſitive or locomotive Animals, and why the Creation of theſe ſecond Cauſes made the fourth Production.

Chap. 4. *Of the Production of the ſecond Degree of Life, and firſt of oviparous Animals, as Fiſh and wateriſh Inſects.*

Chap. 5. *Of the ſecond Genus of oviparous Animals,* viz. *the Aerial: And firſt of Fly-Inſects, ſecondly of Serpents, thirdly of Birds, and why* Moſes *makes the wateriſh and aerial Animals congenial.*

Chap. 6. *Of the terrene, or viviparous Animals.*

Chap. 7. *Of the Creation of Man, the ſixth Production.*

The Concluſion: Wherein is ſhewn the meaning and ſignificancy of theſe Words. And God ſaw every thing that he had made, and behold it was very good.

The Contents.

A Diſcourſe concerning the Terreſtrial Paradiſe, ſhewing how Adam *was introduced into it: The Time he continued in it, and how he and* Eve *employed that Time.*

A Diſcourſe concerning the Conflagration of this material World; the Local Hell; its outmoſt Boundaries, or Abraham's *Gulph.*

A ſhort Treatiſe of Meteorology, with ſome Obſervations concerning the Changes and Alterations of the Weather.

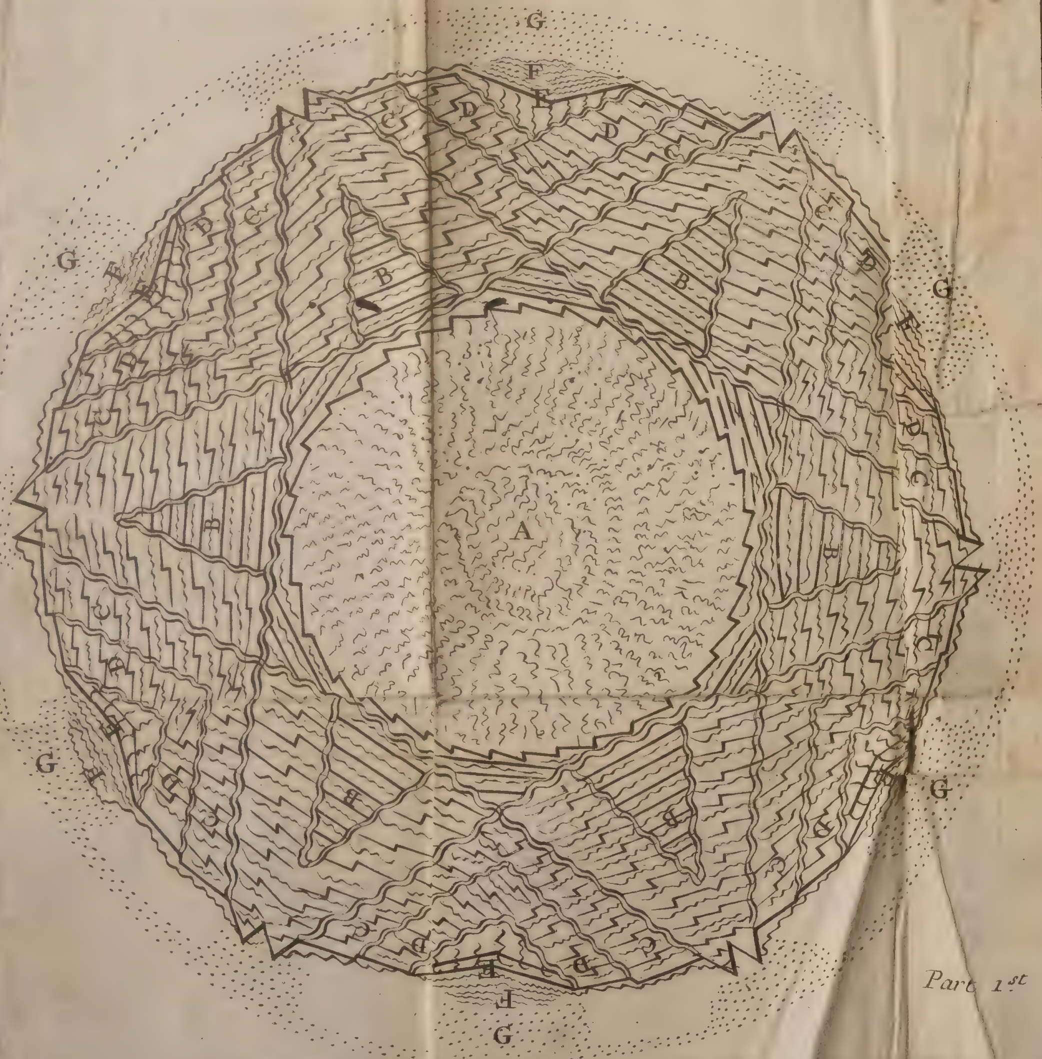
Chap. 1. *Of Vapours and Exhalations,*&c.
Chap. 2. *Of the efficient Cauſes of all Meteors, and firſt of Heat.*
Chap. 3. *Of Cold, the other efficient Cauſe of Meteors.*
Chap. 4. *Of the Air, or Medium wherein all Meteors are generated.*
Chap. 5. *Of fiery Meteors,* &c.
Chap. 6. *Of Comets,* &c.
Chap. 7. *Of Thunder, its Cauſes and Effects.*
Chap. 8. *Of vaporous Meteors, and firſt of Dews and Hoar Froſts.*
Chap. 9. *Of Rain, Hail, and Snow.*
Chap. 10. *Of Hail and Snow, with Obſervations.*
Chap. 11. *Of Froſt and Thaw.*

Chap. 12. *Of the Sphere of Rarefaction.*
Chap. 13. *Of Wind, Helms, and Arches*
Chap. 14. *Prognoſtications of the Change and Alteration of Weather, from the ſetting and riſing of the Sun.*

The Author living at a great Diſtance from the Preſs, deſires the Reader to pardon theſe following Miſtakes.

PAge 5. line 13. read *further*, p. 25. l. 6. r. *Philoſophically*, p. 27. l. 9. r. *Anteperiſtatical*, p. 30. l. 10. r. *Nutritius*, p. 44. l. 25. r. *Fluidity*, p. 67. l. 1. r. *Nature*, p. 91. l. 4. r. *Sublunary*, p. 121. *l.* 24. r. *Litorales*, p. 132. l. 25. r. *Aſſimilation*, p. 139. l. 10. r. *learned*, p. 155. l. 28. r. *Zodiack*.

A Scheme *wherein the Several* Phænmena *of this Terraqueous* Globe *are Explained*.



Part 1st

A	*The* Central Fire *diſseminating a Vital heat, through the whole* Cortex *or* Shel *of the Globe.*
B	*The* Mountains *from the Centre to the Surface.*
C	Heaths.
D	Plains.
E	*The* Channel *of the Sea.* *The flatt* Strata *or Beds of Matter, with their* Acclivities *to the Mountains and* Declivities *to the Seas together with their* Elevations *and* Depreſsions; *thus deſcribed* ⌐ *The winding and turnings of the greater* Veins, *Dividing the several* Claſses *of Matter diſcribed thus* 〰 *through which the whole Maſs of ſubterranean Water* Circulates. *Their Leſser* Fibres, *or Rami Factions, filling all the flat Strata with feeders of Water, which breaking out upon the Surface of the Earth cauſe Springs &c. deſcribed thus.* 〰 ≋ 〰
F	*The* Seas *with the* Rivers *flowing into them from the Tops of the Mountains swelling them into a Gibboſity; and cauſing in them a Continual Fermentation.*
G	Vapors *Ariſing from the Seas, which being Attracted by the Coldneſs of the Mountains, fixeth there; Forming an Atmoſphere round the whole Globe.*

PART. I.

CHAP. I.

The Philoſophical meaning of theſe Words [In the beginning God created the Heavens and the Earth,] *and what may be concluded from them.*

MOSES in his Philoſophical Deſcription of the Creation, lays it down as a granted Principle or a grand *Theſis*, that the Heavens and the Earth, with all their Parts, Furniture and variety of Natures contained in them, were created [*de novo*] and that God the Supream Being Un-created, and Independent, Almighty in Power, and Infinite in Wiſdom and all Perfections, was the efficient cauſe: That the time when the World was Created, was in the beginning of Time; or when Time firſt began to have a Being; for before the World was Created there was duration, or *Stabilis Æternitas* [as the Schoolmen expreſs it] but Time being an equal menſuration of Motion, it and Motion began together.

From this grand *Theſis* we may conclude, Firſt againſt *Ariſtotle*, who endeavour'd by many Arguments to prove that the World, as it now ſtands in Matter and Form, was Eternal; which Hypotheſis advanceth the World into an equality with God; makes it its own efficient Cauſe, Uncreated and Independent.

In the Second place this *Moſaick Theſis* concludes againſt *Plato* and his Followers; who, tho' he did poſitively aſſert, that God made the World; yet he did conceive that the Matter on which it did conſiſt was Eternal and Pre-exiſtent: By which Hypotheſis he concludes God to be an impotent cauſe, not able to create the World without Matter and Stuff to work upon.

Theſe miſtaken Principles in Philoſoſophy were occaſion'd from the Obſervation of the regular courſe of Nature; not conſidering that there might be other cauſes which might produce effects in an other way than cou'd ever come within the compaſs of their narrow obſervation; for how Spiritual Cauſes produce their effects, its impoſſible for us whilſt we continue in this dark ſtate of Matter; wherein we have but a very ſhort and narrow proſpect to underſtand.

3. In the Third place it concludes againſt *Democritus* and his Followers, who did not only conceit that Matter was Eternal and Pre-exiſtent; but that the World had no efficient cauſe, but what was from Chance, or the caſual motion of Matter; which conſiſting of infinite numbers of Atoms or little Corpuſcles of different Figures, Natures and Qualities, which rainged about in a vaſt and infinite ſpace; until at the laſt by Diviſions, Separations and Mixtures occaſioned by their contrary and mixt Qualities, and the innate Power of Sympathy and Antipathy, they at laſt ſetled into the Form and Figure of this World, which it can no more alter or vary from, than the active Fire be taught to change its Nature, and deſcend and Gravation to aſcend and fly upward.

No doubt but this Hypotheſis was grounded upon an experimental Obſervation of the ſeveral Kinds of Matter of different Natures, which being mixt together in a Glaſs, or any tranſparent Veſſel, will ſeparate and divide themſelves *proprio motu*; tho never ſo jumbled and mix'd together.

I ſhall not in this place ſhew you the abſurdity of this Hypotheſis; but rather chuſe in the following Chapters to give ſome account what Feats, Matter and Motion will produce by vertue of their contrary Qualities, and the power of Sympathy and Antipathy; and how far God Almighty might make uſe of theſe towards the forming the material part of this World.

4. We may hence farther conclude, that although neither the World as it ſtands, nor the Matter on which it conſiſts did pre-exiſt; yet it was an immediate conſequent of Eternity, and the natural product of the Divine Eſſence, and Attributes (*viz.*) Power, Wiſdom, and Goodneſs, according to that Model and Idea pre-conceiv'd in the Divine Underſtanding:

For it cannot be imagin'd that the Divine Eſſence wou'd for ſome time ſit ſtill, and wrap up it's ſelf in ſloth and idleneſs; but did always diſplay its ſelf in a vigorous activity.

Beſides the natural tendency of Infinite Power, is Action; of Infinite Wiſdom is Counſel; of Infinite Goodneſs is Beneficence: We cannot therefore but conclude from theſe Natural Arguments, that God would from all Eternity follow the inclinations of his own Divine Perfections.

5. From this grand *Theſis* we may yet futher conclude, that this Univerſal Fabrick of the World was not created at one ſtroke, by an imperious *Fiat*; for tho this might have been conſiſtent with Infinite Power; yet it would not have been agreeable with Infinite Wiſdom, which conſiſts in Deliberation, Counſel and Contrivance.

Moſes therefore tells us that God firſt created the Heavens, and then the Earth: Like as ſome mighty Monarch deſigning to build a ſpacious and moſt glorious Palace, firſt forms the Model of it in his mind; and having prepar'd his Materials, ſets on work his Under-agents, who firſt of all lay the Foundations, and compleat his own Royal Apartments, then the Apartments of his chief Miniſters of State, after that Chambers for his Domeſticks, and laſt of all Lodgings for his out Servants; and the Work being finiſh'd, according to the Model which he gave his Architects to work by, he gives it his Approbation. In like manner, the Great and Almighty Monarch of the Univerſe may be ſuppoſed, firſt to have laid the Foundations of thoſe Super-Cœleſtial Regions of unacceſſable Light, the Royal Chambers of his own moſt Glorious Preſence; where he ſits in great Majeſty attended with an innumerable retinue of the moſt Noble Angels his Courtiers: After theſe he creates the higheſt of the Cœleſtial Spheres, in which he placed Thouſands of Royal Manſions, where the Arch-Angels and Brighter Cherubins, the chief Miniſters of State in that Cœleſtial Kingdom keep their reſidence: And theſe are the Morning Stars which *Job* tells us [by way of *Synecdoche*] that met together, and the Sons of God that did ſhout for joy. After theſe God created the inner or lower Spheres, in which he placed innumerable numbers of bright, lucid and Ætherial Globes; wherein the inferior Angels and Domeſtick Officers do inhabit, and theſe the Scripture ſtiles *Miniſtring Spirits.*

And theſe differ in Office, Power and Light, as they are placed in Spheres nearer, or at a diſtance from the Regions of Light: For as one Star differeth from another Star in Glory, Light, Purity and Magnitude; So do their Heavenly Inhabitants: And ſo ſhall it be in the Reſurrection from the Dead; for as Men improve here in Vertue, Goodneſs and the Divine Life and Light, ſo ſhall they be placed nearer, or at a diſtance from God, the Fountain of Life and Light.

After the finiſhing of theſe Inner Courts of this Royal Palace, laſt of all God created this Material Globe or Outer Court; and made it the Center of the Univerſe: And it's built of the Rubbidge, Droſs and Sediment of the whole Creation, and inhabited with the meaneſt of Creatures, and loweſt degree of Life and Perfection, which may moſt properly be called God's out Servants; over which he has placed Man Deputy Lord Governour.

This Material Globe, tho it appears in its own dimenſions to be of great Magnitude to us (who bear not ſo much proportion to it, as a Mole-hill does to the greateſtMountain)yet being compared to the whole Univerſe [if the computation of the beſt Philoſophers be true] it will ſcarce bear proportion to the Ninety ſix thouſand part of it.

It cannot therefore be imagined that the Wiſe Creator [who never made any thing in vain, but to the beſt ends and wiſeſt Purpoſes] ſhould be ſo fond of a piece of dull ſtupid Matter, as to create all thoſe innumerable numbers of Bright, Lucid, Ætherial Globes (the leaſt of which exceeding this Mole-hill in Magnitude by ſeveral Diameters) for no other end or purpoſe than diſtinguiſhing of Days, Months, Seaſons and Years ; and for caſting a dark glimmering light to us poor Mortals.

As God Almighty finiſhed any part of the Creation, he gave it a motion, and this motion it performs naturally and inſenſibly, without labour or difficulty; as our Blood circulates through our Veins and our Vital Spirits glide in the Nerves through the whole Body.

The Almighty having now finiſhed the Creation which made up but one Royal-Palace, containing in it innumerable Manſions, fit for the Subjects of ſo great a Monarch to live in: He ſits at the Helm of this Floating Univerſe, and Steers all its motions with a ſteddy and unerring hand.

And it can be no more labour to God to govern and actuate this World; who as an Univerſal Soul is diffus'd in it, and is vitally preſent in every part of it, than for a Man's rational Soul by Will and Cogitation, to move a Finger or a Toe, or any other part of his Body; tho at the greateſt diſtance from its Seat.

CHAP. II.

Of God the Supream and Efficient Cauſe; and why Moſes *proves not the being of a God expreſly by way of Argument; but implicitly by deſcribing of the ſeveral degrees of Perfection, and the Subordinations of Life.*

WHen *Moſes* writ this excellent Syſtem of the Creation, Politheiſm and Idolatry had prevailed over the generality of Mankind, and *Abraham*'s Poſterity were become Worſhippers of *Egyptian* Gods, as appears by their making of a *Molten Calf at Horeb.*

Yet notwithſtanding this multitude of Inferior Deities which the World had ſet up for Divine Worſhip; the generality of Mankind did univerſally believe, that there was one Supreme God, who was the efficient Cauſe and Almighty Creator of this World, conſiſting of the Heavens and the Earth: and that this God was the Father and Governour of all the reſt.

The *Philoſopher* might therefore juſtly conclude it ſuperfluous to prove by ſtrength of Argument a Tenet, or rather an Article of Faith; to which the common Suffrage of Mankind did ſo univerſally conſent and agree: And if it be ſuppos'd that *Moſes* writ this Syſtem of the Creation, with the reſt of his Book, which gives an account of the Patriarchal Genealogies, on purpoſe for the benefit and inſtruction of the *Iſraelites*; who in all probability could not but be ignorant of the Traditions and Religion of their Anceſtors: [the *ipſe dixit*] of ſo great a Philoſopher; a Man ſo eminent for theſe mighty and unparallel'd Miracles and Wonders, which th' Almighty wrought by his Hand upon *Egypt* before their eyes; were ſufficient to convince them, not only of a bare credibility; but of the Truth and Certainty of this Divine *Theſis*, that there was a God, and that he created the Heavens and the Earth.

But as God did not limit and confine his Favours wholly to *Abraham's* Poſterity; but extends them to the Univerſal Body of Mankind: So notwithſtanding that *Moſes* writ theſe Books for the inſtruction of that People in the firſt place, he undoubtedly deſign'd them for the information of others living in a State of Ignorance:

And therefore although he does not expreſly by way of Argument prove the Being of a God, and that he was the Supreme Cauſe of the World's Creation [*Atheiſm* being not then heard of in the World] yet he does it implicitly by deſcribing of thoſe ſeveral Degrees and Subordinations of Life in the World; and by ſhewing how every inferior Rank of Creatures is ſubſervient to its Superior; and how every inferior Species is concatenated and link'd to its Superior by intermediates, all which is ſo viſible and obvious in the Frame of the World, that an eaſie Philoſopher without any great difficulty, or hard Study may aſcend *Gradatim*, firſt from thoſe common Minerals of Salt, Sulphur and Mercury, to the ſeveral degrees and kinds of Oars and Metals; from theſe to the fertile Soil: from it to the ſeveral degrees of Life and Perfection in Vegetables, as Graſs, Herbs, Plants, Shrubs, Trees, *&c.* and from theſe to the *Zoophyta* or Plant-Animals, which concatenates the higheſt degree of Vegetation to the loweſt degree of Senſation; from the ſeveral degrees of Senſation in Brutal Animals, to Man which is an intermediate Animal, that links and couples Heaven and Eearth together; from Man to the ſeveral degrees of Light, Life and Perfection in the Angelick Nature; and from the Intellectual Nature, to God the Fountain of Light, Life and Perfection; who, as an Univerſal Soul, actuates the whole World, by giving of the ſeveral degrees of Life and Perfection to all the Creatures in the Animal World, as they are plac'd in Orbs or Spheres nearer or at a greater diſtance from his Divine Eſſence.

Thus in God all Creatures Live, Move, and have their Beings, and by theſe gradations we may either aſcend up to Heaven, where God Almighty reſides in Infinite Glory and Perfection, or from thence deſcend to the hidden and dark Regions of Matter.

CHAP. III.

Of the Creation of Second Cauſes, and the manner of their Production; and ways of Working.

THE grand reaſon why *Plato* and *Ariſtotle*, and the reſt of the Natural Philoſophers did aſſume it as a granted Principle, that Nothing was made out of Nothing; and that every thing produced, had neceſſarily ſome pre-exiſtent Matter out of which it was ſo formed; was [as I have already hinted] becauſe they cou'd not obſerve in the ordinary courſe of Nature any thing produced *de novo*; therefore they concluded it impoſſible that any ſuch Production cou'd ever be, or happen in Nature:

But from particular Experiments or Obſervations to eſtabliſh a general Concluſion; eſpecially concerning the impoſſibility of any thing's Exiſtence, is no regular and warrantable way of argumentation; for there may be Agents of another Sort, and Powers which can produce Effects in another way, than cou'd ever come within the compaſs of our obſervation ; for we ſee, and cannot but make it an obſervation, that one ſenſitive Animal by the power of Senſation can do more, and produce greater effects, than all the Vegetables can produce by the power and ſtrength of Vegetation. And one Man by the Power of his Natural Reaſon can produce more noble Effects, than all the Brute Animals by the Strength of Senſation ; ſo one Angel by the Power and Vigour of his Spiritual and Intellectual Natures, can produce effects more great and wonderful, than all the Men in the World can by the power of Reaſon, tho' never ſo exalted and ſublimated ; for we read in 2 *Kings* 19. Chap. and 15. Verſe that an Angel in one night went out and ſmote in the Camp of th' *Aſſyrians* one Hundred and fourſcore and five thouſand ; but how or by what means this Angelick, power was exerciſed it is not within the compaſs of ſhallow Reaſon to conceive: Yet we may reaſonably conclude from it, that if an Angel, by the Power of his Intellectual Nature, can do more than all the Men in the World ; ſo God Almighty by his Divine Eſſence can produce greater and far more wonderful effects than the whole Angelick Nature; even ſuch as is impoſſible either for us, or them to underſtand.

But *Moſes* having, to his great improvements in Natural Philoſopy, the Advantages of the Patriarchal Traditions, and a Divine Revelation; and being beſt acquainted with God Almighty's Power in producing Effects; doth not only poſitively aſſert, that God was the Maker and Builder of this World; but that he Created it and the Matter on which it doth conſiſt, out of Nothing, and that by uttering of that Almighty Word [*fiat*] not audibly, for then there was no ſenſible Auditor in Being; but mentally, that is, by an Act of Volition; *ſic volo ſic jubeo* being only a Prerogative of Almighty Power.

The Second Cauſes which this Almighty Power Created out of Nothing, and which he made uſe of as inſtrumental in all Productions of a mixt Conſtitution, may be conſidered either as they are Eſſential or Accidental.

The Eſſential Cauſes were Light and Darkneſs; the External and Accidental Cauſes were Motion, Time, and Place; without which all Natural Productions are Phyſically impoſſible.

God having created theſe Second Cauſes by another Imperious Word, ſet them on working; and he gave them alſo a Rule or Model to work by, which is moſt commonly called the Courſe of Nature; and when theſe new Agents had produced any effect, he view'd it, and gave it his Divine approbation, in theſe Words; *God ſaw that it was good* (i. e.) that it was agreeable with that Rule and Model he had given them to work by; which words, tho' they be ſpoken *ad Hominem*, yet undoubtedly *Moſes* intended by them to inſtruct and inform Mankind, that the World was not made by Chance, or the caſual Motion of blind Atoms, as ſome ſince have Atheiſtically aſſerted; but by Wiſdom, Councel and Deliberation.

And this eſtabliſh'd Courſe of Nature, or theſe Laws and Rules which the Divine Wiſdom gave to the Second Cauſes to work by, he never interrupts or varies from; but upon great and extraordinary occaſions, when he is pleas'd to give ſome Demonſtrations of his Almighty Power and Univerſal Providence by which he governs the World at his Will and Pleaſure; then

he

he can either divert the Natural Cauſes from their uſual courſe, or by them produce Supernatural Effects; as the deſtruction of *Sodom* and *Gomorrah* by extraordinary Thunder and Lightning; the Deſtruction of all living Creatures upon the face of the Earth by an Univerſal Deluge; or he can ſtop them in their Natural Courſe, as when he caus'd the Sea to divide and ſtand ſtill, and the Sun to move backwards.

CHAP. IV.

Of Light and Darkneſs, the common Principles of mix'd Bodies, what they were in Maſs; and how their diviſion made the firſt production.

ALL the Natural Philoſophers wanting the aſſiſtance of a Divine Revelation, did agree in this; that there cou'd be no Production of a mixt Conſtitution, without a Sympathetical Union of an active and paſſive Principle; but what theſe Principles of Activity and Paſſivity were, they could not eaſily determine.

Theſe our great Philoſopher expreſſeth by the Names of Light and Darkneſs; which when they came immediately out of Gods hand, were bound up and hamper'd in one confus'd Maſs; which might fitly be compar'd to a dark and palpable Miſt, like the *Ægyptian* Darkneſs which was to be felt, in which vaſt Fog or Miſt were bound up, and ſmother'd thoſe bright, lucid and active Particles of pure and Volatile Æther, as we ſee Light inclos'd within the walls of a dark Lanthorn; or the active Particles of Fire when ſmother'd in Aſhes, or impriſon'd within the dark body of Matter.

Thus Darkneſs was upon the face of this thick Miſt or Fog of Matter, until God by another Almighty *Fiat* created Motion; which being infus'd into the ſtagnating Miſt of Matter, the whole Maſs of it was put into a fermentation and motion; and whilſt the contrary Qualities were acting their Antipathies one upon another, theſe nimble and active Particles of lucid Æther [being the moſt Volatile] broke through this dark Maſs of Matter, and uniting themſelves, caus'd a bright ſhining Light, which *Moſes* calls

Day: and this diviſion of Light from Darkneſs, occaſion'd by the putting of the whole Maſs of Matter into a Fermentation and Motion, made the firſt Production.

CHAP. V.

Of Light, the formal Cauſe of all mixt Productions, what it was whilſt in Maſs.

BY Light is to be underſtood that vaſt Ætherial flame, which whilſt it was in Maſs diffus'd its bright ſhining Rays, not only through the Material Regions, but the Planetary and Cœleſtial Spheres: This Ætherial flame was the *Anima Mundi*, the Vehicle of Life, wherein was contain'd the Seminal and Specifick Forms of all ſublunary Creatures, [Man only excepted] and then danc'd about the Paſſive Matter, like Atoms in the Morning Sun Beams; until its Prolifick Slime, by vertue of its Plaſtick Power was modifi'd and prepar'd for receiving of Life.

And this ſeems to be the ſenſe and Philoſophical meaning of *Moſes* in the Second Chapter of *Geneſis*, Verſe the Fifth; God made every Plant of the Field before it was in the Earth, and every Herb of the Field before it grew; meaning only their Seminal and Specifick Forms which were contain'd in a Vehicle of Light, before they were united to their Material Vehicles.

Thus Light according to the *Moſaick* Principles of Natural Philoſophy, became the Formal Cauſe or the Male Parent of all mixt Productions.

CHAP. VI.

Of Darkneſs, the material cauſe of all mixt Productions; what it was in Maſs, how it was reduc'd into Form: Of the Power of Matter and Motion: Of Sympathy and Antiphathy.

BY Darkneſs, the other Principle, or Material cauſe of generation, is not meant a bare privation of Light; but that vaſt Miſt, or Dark Fog of Matter conſiſting of infinite Numbers of Particles or little Corpuſcles of different Figures, and contrary Qualities, which by reaſon of a Principle of motion infus'd into it, run a Reel in a dark confuſion until theſe contrary Qualities of Heat and Cold, Siccity and Humidity, Gravitation and Levity, falling out among 'em ſelves begun to act their Antipathies upon one another; which cauſing them to ſeparate and divide, thoſe of the ſame kindred and affinity, by the Power of a Secret and Innate Sympathy drew together and united.

And firſt of all, theſe Particles of Matter, which were of a hot and volatile Nature, being moſt active and vigorous, plac'd themſelves in the Centre or Middle, as we obſerve 'em always to do in Stacks of Hay, Corn or other compoſitions of mixt Matters, wherein there is a ſtrife or conteſt between thoſe contrary Qualities of Heat and Cold, Siccity and Humidity.

And theſe hot and fiery Particles having by their natural tendency taken poſſeſſion of the Centre, began immediately to act their Antipathy upon thoſe Particles of Matter that were of a cold and wateriſh ſubſtance; forcing them to fly to the Circumference, and to range about in thick Fogs and wateriſh Miſts; filling up not only that vaſt Expanſion between the ſuperficies of the Earth and the Moons *Vortex*; but all the Planetary Spheres.

During which conteſt between Heat and Cold, Fire and Water, the intermediate Matter of a mixt Nature, neither ſimply hot nor cold; but participating of both Natures (*viz.*) ſuch as were of an Unctious, Pinguid, Bituminous and Terrene Quality, ſetled themſelves in a midle Sphere.

And every Claſs of Matter of the ſame Kind and Species, the better to ſecure it ſelf from intermixing with the Matter of a different Nature, did incloſe it ſelf with great Dykes or Partitions, conſiſting of Excrementitious, confus'd and undigeſted Matter; and the natural Poſition of theſe being Rake-wiſe from the ſurface towards the Centre, they moſt properly may be eſteem'd the greater joynts of the Earth.

And as theſe divide the ſeveral Kinds of Matter, ſo they preſerve the ſeveral Feeders and Mineral Waters from intermixing, as will be more largely ſhewn; when we ſhall have occaſion to Diſcourſe of Dykes, Rakes, Veins, Strings, Riders, *&c.*

The confus'd Maſs of mixt Matter being thus reduc'd to ſeveral Claſſes and a regular Form; every Claſs leading to ſome proper Mine or Mineral, which is the finer and better digeſted part of that Claſs; as Coal, Rudle, Iron and the ſeveral Kinds of Ore; and theſe all lay in lax and fluid Strata or Beds, like the looſe Leaves in an unpreſs'd Volume or Book; or like the weak joynts in a newly conceiv'd

Embrio, encloſ'd in a Bag of Water in the Womb of its pregnant Mother.

CHAP. VII.

Of the Spirit of God moving upon the face of the Waters, what is Pholoſophically meant by it: Of the firſt diviſion of the Waters, and the clearing of the ſublunary Firmament.

THE whole Maſs of Terrene Matter being thus far reduc'd into Form and Order; [not according to the Laws of Gravity, the heavieſt ſubſiding firſt in order and falling loweſt, as Dr. *Woodward* conceives, which miſtake in Obſervation will be made apparent in its proper place] [but by motion of conſent, ſuitability of Natures, and an agreeable juxta-poſition of Parts.]

The *Spirit of God moved upon the face of the Waters*; which Words, if we conſider 'em under a Philoſophical Notion, may be underſtood of the Ætherial Flame, which moving upon thoſe wateriſh Fogs and Miſts, rarifi'd the more ſubtile and tenuious Parts or Fumes of it into a briſk gale of cold condenſing Wind; which did not only clear up the Sublunary Firmament by dividing of thoſe Fogs into Sublunary and Superlunary Waters; but by condenſing the Sublunary Fogs and Miſts into a vaſt body of Water, it cover'd and ſurrounded the whole body of Terrene Matter; and as the Waters ſank down towards the Centre, they preſs'd together the ſeveral *Strata* or Layers of Stones, Mines, Minerals and other Subterrene Earths, as we preſs together the leaves of a large Volume; and in our ſinking and digging into the Body of the Earth, we find them lying upon Flats with a Dibb and Riſe, the Riſe towards the tops of Mountains, and the Dibb towards the main Ocean; as the Waters left them and forc'd them up, when they drew down into their proper Channel.

The whole Maſs of Terrene Matter being thus Compact and Cemented together by the preſſures of the circumambient Waters, as we preſs Brick and Tyle in their ſeveral Moulds; the Central Fire did by its heat bake and conſolidate thoſe Stones, Metals, Mines and Minerals that were of a fiery nature, as well as thoſe of an unctuous and pinguid quality, into their ſeveral degrees of Conſolidation and Induration; whilſt the Anteperiſtical Cold, together with thoſe petrifying juices of Salt and Nitre which then did abound in all the lax and undigeſted *Strata*, did petrify thoſe *Strata* of a Terrene Nature into their ſeveral degrees of Induration and Lapidifaction.

By theſe Natural Gradations the Earth became fixt upon its Center, and the Waters a fluid body moving and circulating about it; and they both made one Terraqueous Globe of a Spherical and Mathematical Rotundity; all the Lines from the Superficies to the Centre being of an equal length.

Thus the ſpace between the ſurface of the Waters and the Moon's *Vortex* was clear'd of all thoſe Fogs and Miſts which ranged about in it: And being fill'd with their Air, *Moſes* calls it the Firmament of Heaven, which made the ſecond Production (*viz.*) of ſpace, wherein the Under-agents or ſecond Cauſes had room to work, and produce effects of a higher and more noble Nature and Quality.

CHAP. VIII.

The diviſion of the lower Waters into Subterranean, Superterranean, and Nubiferous; and by what Gradations the dry Land appeared.

THO' this great Embrio was ready for birth and to breath in freſh Air; yet it could not be deliver'd from this great Bag of Water, wherein it was enclos'd, by any innate Power it had in it ſelf, without a Supernatural aſſiſtance: The Almighty was pleas'd therefore to play the Midwife, and to deliver it by breaking of this great body of Water; and by dividing of the ſweet from thoſe of a Saline and Brakiſh Nature.

For as ſoon as the intermediate Matter which made the Shell of the Earth, was reduc'd into Form and Order; and the ſeveral *Strata* or Layers of Stones, Metals, Minerals, and Subterrene Earths with their croſs-cutting and dividing Dykes, Rakes, Ryders, Veins and Strings or Side-branches had receiv'd from the heat of the Central fire and the petrefying Juices of Salt and Nitre, their ſeveral degrees of Incruſtation, Induration and Lapidifaction; the thirſty Matter gradually ſuckt in the thin ſweet Water, until all its Veins, Dykes, Cavities and Pores were fill'd and ſaturated with it.

The Salt Water being the Sedement of the whole Maſs, and likewiſe being too thick to penetrate and paſs through the ſtrait Pores and Strainers of the ſolid and condenſed Matter, did gradually draw down to its Channel: And all the Veins and Pores of the Earth being now Saturated with ſweet Water; the Subterranean Lympheducts, or underground Water-works began firſt to bubble up and play from the tops of the higheſt Mountains; from whence the Rivers took their firſt riſe, and began to form their courſes to the Sea; and by their rapidity and weight continually preſſing in upon her from all ſides, ſwell'd her up into a Gibboſity, and forc'd her into a conſtant flux and reflux, which reciprocation of Motion cauſing in her a boyling Fermentation, the ſweet Water does diſentangle it ſelf from the Salt; and being lighter, riſeth up in Fumes and Vapours, which fly abroad until they be condens'd into Clouds, which falling down in ſhowers of ſweet Water upon the Earth becomes the *Succus Nutritivus* of the fleſhy part of it; giving not only a vital nouriſhment to the ſeveral Kinds of Animals living on the outer Coat or Skin of it; but repairing the Subterranean Waters by preſerving them from waſting.

The Waters being now divided into Superterranean, Subterranean and Nubiferous, the dry Land appear'd, and was gradually prepar'd for being an habitable World.

CHAP. IX.

Of the Primeval or Antidiluvian Figure of the Earth.

Dr. *Burnets* inconſiſtences.

DR. *Burnet*, in his Theory of the Earth, conceits and endeavours to perſwade the World, that the Primeval Earth was Spherically or Mathematically round, without Seas, Mountains or any inequalities upon its Surface.

Which Hypotheſis (or rather ingenious Conceit) ſeems in the firſt place to be inconſiſtent with the Original State of this Material Globe; which, being deſign'd for a place of Habition for ſeveral Kinds of Animals of a mixt and compounded Conſtitution, whoſe vital flame is nouriſh'd and maintain'd by a continual reſpiration of a ſoft and vaporous Air; which muſt not only be frequently fann'd with the brisk gales and blaſts of a cleanſing Wind, but alſo moiſtned and ſweetned with ſhowers frequently falling through it: All which have their Original cauſe from the conſtant flux and reflux of the Sea, and

The Cauſe of this Globes Atmoſphere.

and thoſe inequalities upon the ſurface of the Earth: Without which there would neither have been an Atmoſphere, Wind, Rain, or Air; but the Superficies of the Earth would have been [by the Sun's Beams continually beating upon it] Baked and Incruſted into the hardneſs of Brick and Tyle.

This Hypotheſis ſeems alſo inconſiſtent with the different Natures of thoſe Animals with which the Almighty Creator has been pleas'd to ſtock it; ſome of which being only produc'd in a Warm and Fertile Soil, others only in a Cold and Sterile: So ſome Animals delight only to breath a warm and ſoft Air, others a more bleak and piercing: Thus Strawberries and Gilliflowers will not thrive upon the tops of cold and barren Mountains; nor Mountain Vegetables in the moſt fertile Soil, or beſt prepar'd warm Beds: This will be made more clear and evident when we ſhall give account of the natural uſes of the Flux and Reflux of the Sea, and thoſe inequalities and irregularities of the Earth's Surface.

Once more to ſuppoſe the Earth to have been of an even and Spherical Superficies ſeems inconſiſtent with the different Kinds and Natures of that Matter of which it conſiſts; ſome of which being hard, others ſoft, ſome fix'd others fluid, it cann't be imagin'd that all this variety of Matter would ſettle in a Figure Spherically and Mathematically round.

From theſe Arguments we may without being guilty of any great preſumption, conclude againſt Dr. *Burnet*'s Hypotheſis, that as the Antediluvian Earth conſiſted of the ſame Matter with this preſent Earth, and produc'd the ſame Species of Animals, of the ſame natures and qualities, it was of the ſame Figure that now we find it in, a Terraqueous Globe of a Phyſical Rotundity, with Seas, Mountains, *&c.*

Dr. *Woodard*'s contradiction of himſelf.

And that theſe Irregularities and Inequalities of this Terreſtrial Globe did not Date their Original from that Diſruption which was occaſion'd by the Deluge as Dr. *Woodward* poſitively aſſerts, *Part* 2d *page* 80. is evident from *part* 6. *Page* 246. where he undertakes to prove that the Face of the Earth before the Deluge was not ſmooth, even and uniform; but unequal, and diſtinguiſh'd with Mountains, Valleys; as alſo with Seas, Lakes and Rivers.

CHAP. X.

Of the conſtituent parts of the Earth: And firſt of the Volatile part of it, or the Central Fire; its natural Uſes.

THE Conſtituent parts of this Terraqueous Globe are reducible to three different Claſſes of Matter, (*viz.*) Volatile, Fix'd and Fluid; and theſe bear equal proportion one to another, and in the Structure of the Earth do occupy the ſame proportion of place.

The Volatile Matter, conſiſting of ſublimated Sulphur, Nitre and Bitumen keeps poſſeſſion of the Central part; and as all Matter of the ſame kind and affinity, which having an appetite to Union, naturally affects a round and globular Figure, ſo the Central Fire may be ſuppos'd to be of the ſame Form.

That Figure wherein the Excentral Fire appears, is only accidental, occaſion'd by the compreſſures of the circumambient Air.

That vaſt ſubterranean Vault wherein this volatile Globe of Central Fire is contain'd [which the Miners call the Belly of the Earth] may be ſuppos'd to be either of a round or circular; or of an æquilateral, multangular Figure; occaſion'd by the ſolid Strata of Stones ſpreading and vaulting themſelves about it.

The natural Uſes of this Central Fire ſeem to be Analogous to that Vital Flame which is ſeated in the Heart or Center of all Animals; for as that by its Vital heat enlivens the whole Body; ſo this Central Fire by that Vital warmth it diſſeminates through the whole maſs of Matter, enlivens it; and gives as well to the ſeveral Strata of Stones, Metals, Minerals and other ſubterranean Earths, their degrees of Conſolidation; as to the ſeveral kinds of Ores, their different degrees of Purity and Perfection. 1. *Uſe.*

As the Vital Flame does not only cauſe the Ebullition and Pulſifick Faculty in the Exterior parts of the Body; but 2. *Uſe.*

alſo the Circulation of the whole Maſs of Blood through all the greater and leſſer Veins of it; ſo the Central Fire is as well the cauſe of the Ebullition of Springs, *Thermæ* and Mineral *Feeders* which break out upon the tops of Mountains and the exterior parts of the Earth; as of the conſtant Circulation of the whole Maſs of Subterranean Water through thoſe Dykes, Rakes and Fiſſures, which from the Mountains do divide and ſpread themſelves through the whole Body of the Earth, and are the greater and leſſer Veins of it.

3. *Uſe.* Again, as the Vital Flame gives the tincture and colour to the Blood, Fleſh and all the Heterogeneous parts of the Body; ſo the Central Fire, by the different degrees of concoction and boyling up of Matter, gave to the ſeveral kinds of it their different Tinctures and Colours; this might be illuſtrated by ſeveral Analogous Experiments and Obſervations, as in the boiling of Quinces and other Fruits; ſo likewiſe in Baking of Bread, *&c.*

4. *Uſe.* The Central Fire, by running a perpetual Round within the Boundaries of its own Infernal Vault, carries the Shell of the Earth about with

it, and is the cauſe of its Diurnal Motion.

5. *Uſe.* Laſtly, It is the Earth's Æquilibrium that keeps it fix'd upon its Center.

CHAP. XI.

Of the fixt part of the Earth: And firſt of the Inequalities of its Surface; their Natural Cauſes and Uſes.

THE fixt part of this Terraqueous Globe which we call the Earth, may be deſcrib'd either as to its Exterior parts, or Interior conſiſtences of it.

The Exterior parts conſiſt of Mountains, Heaths, Dales, Plains, Valleys, with the Channel of the Sea.

The Interior conſiſtences of it are the Strata or Beds of Stones, Metals, Mines, Minerals and Subterranean Earths, all lying upon Flats with a Dibb and Riſe.

Or they are Dikes, Rakes, Riders, Veins and Strings either croſs-cutting and dividing the ſeveral kinds of Stones, Metals, Mines, Minerals, &c. of a different kind; or croſs-cutting and dividing thoſe of the ſame Species; as all Metallick Rakes, &c.

Of the Inequalities of the Earths Surface.

1. *Uſe.* THeſe Irregularities and Inequalities upon the Superficies of the Earth, are occaſion'd by the Elevations and Depreſſions of the ſolid Strata; and theſe are cau'd either by the greater Dikes, which divide one Species of Stones, &c. from thoſe of a different kind; and theſe greater Dikes make Channels and Water-courſes for the greater Rivers, which following their windings and turnings till they empty themſelves into the Sea, cauſe all thoſe pleaſant Dales, which at laſt, when the Mountains wear out, dilate themſelves into ſpacious Plains and Valleys.

2. *Uſe.* The leſſer Dikes and Joynts which divide the Stones, &c. of the ſame kind, by throwing them up and down,

cauſe all thoſe leſſer Hills, which as well delight the Eye with a grateful variety of Objects, as refrigerate and cheriſh the whole Body with a more cool, clear and wholſome Air.

The cauſe of Hills.

There is not any thing in this Natural World, that contributes more towards the making of it Habitable, then theſe inæqualities upon its Surface.

1. The Cauſe of different Soils and Natures of Vegetables.

For, First they occaſion all theſe different Kinds and Natures of Soil, which produce the ſeveral Species of Vegetables ſuitable to the ſeveral Natures of thoſe Animals that feed upon them: The Earth's Surface being God's Storehouſe, wherein is provided Food and Nouriſhment agreeable to the Nature of every Animal, and every living Creature by a Natural Inſtinct knows its proper Food and Nouriſhment, and when and where to find it.

2. The different Qualities of the Air.

They occaſion all thoſe different qualities of the Air, as Warm, Cold, Thick, Thin, Moiſt and Dry; for as God has provided Food ſuitable to the ſeveral Natures to feed on, ſo He has provided Air ſuitable to their Natures to Breath in.

3. The occaſion of Springs, &c. Thoſe Inequalities upon the Earth occaſion all thoſe Springs, Mineral Feeders and Medicinal Waters, which break out in Rapid Streams from the Tops of Mountains, and the Skirts of leſſer Hills; ſo that as God has provided convenient Food for every Animal to feed upon, and agreeable Air to breath in; He has likewiſe [by cauſing of Springs to break forth and bubble up at the Foot almoſt of every Hill] provided convenient Water for every Animal to quench its Thirſt with.

Whereas if the Earth had been of an Even and Spherical Superficies, cover'd with one ſolid Strata, or incruſted Cover of Earth; I doubt we ſhould have been forc'd to have Digg'd as deep as Dr. *Burnet* and Dr. *Woodward*'s Abyſs, before we ſhou'd have met with Water ſufficient to have quench'd our Thirſt; and its alſo doubtful that when we had found it, it wou'd not have been Sweet and Wholſome.

4. Of the breaking out of Mines, &c. Theſe Inequalities alſo cauſe the ſeveral Strata of Stones, Mines and Ores, &c. [having a Natural Riſe] to break forth at Day, ſo that the Ingenious and Induſtrious Miner may meet

with, not only Stone for Building of Houſes, Coals for his Fires; but the ſeveral Kinds of Ore to enrich his Coffers with.

5. Of the production of Trees, *&c.*

Theſe Inequalities alſo produce all thoſe Pleaſant and moſt Profitable Copiſes and Thickets of all Kinds of Trees, which delight moſt to grow where the ſolid Beds of Stone are weak and broken and lye near day, and where they may eaſily thruſt their Roots into their broken Joints and ſuck in the Mineral Spirits, *&c.*

CHAP. XII.

Of Mountains, their Original Cauſe, Conſiſtences and Natural Uſes; being the firſt Dry Land that appear'd.

The Cauſe of Mountains.

THE Mountains are the Ebullition of Matter, occaſion'd by the Central Fire when it was in its full Strength and Vigour.

They

1. *Uſe.* TheirConſiſtences. They conſiſt of ſuch Strata of Stones, Metals, Raggs, Chivers, Cills, *&c.* as are of a Hot quality; and theſe are like ſo many Hot-beds wherein the ſeveral kinds of Ore receiv'd their Conceptions, as well as their different degrees of Concoction and Perfection; as hereafter will be more fully ſhewn.

2. *Uſe.* Their Natural Uſes. The Mountains conſiſting of ſuch Matter as is of a Hot Quality, and being bound with ſtrong Cills, which having a quicker Riſe than thoſe upon the Plains, do lift up their Heads above the reſt of the Earth; and became not only the great Pillars and Supporters of the whole Fabrick; but the firſt Sea-Banks that broke the Circulation of the Waters, and were the firſt dry Land that appear'd.

3. *Uſe.* The Tops of the Mountains reaching as high as the cold Regions of the Air; and having but the advantage of a ſingle Reflection of the Sun's Globuli, have always a Cold and Condenſing Air upon them, and ſtriking a Level with the Gibboſity of the Sea, do by the Sympathy between Cold and Cold attract the Vapours to them, which either fall down in Showers of Rain, being Condens'd by the riſing of the Ground

Cold; or are rarifi'd into Wind by the falling of the Sphere of Rarefaction, which term will be hereafter explain'd when we deſcribe the Nature of Winds.

All the greateſt Dikes and Diviſions of the Earth [as I have already obſerv'd] do contract themſelves and meet in the Mountains, as the Veins do in the Necks of Animals; and theſe being the greater Veins of the Earth, by dividing into leſſer Veins and Branches, maintain and preſerve a conſtant Communication or Circulation of Water through the whole Body. 4. *Uſe.*

And this is the only Reaſon why the Heads of all the greateſt Rivers in the World have their Riſe from the Tops or Sides of the higheſt Mountains; which by following of the Windings and Turnings of theſe greater Dikes or Veins, and by receiving into them the leſſer Dike-Feeders, are increas'd from ſmall Rivulets into large and Navigable Rivers, which at the laſt empty themſelves into the Main Ocean.

The Declivity of the Mountains gives Rapidity of Motion to the Rivers, which does not only preſerve their Sweetneſs for the benefit of Men and Beaſts; but 5. *Uſe.*

alſo by preſſing upon the Sea from all ſides, ſwells her up into a Gibboſity, and is the only cauſe of her Flux and Reflux, which the following Chapters will give account of.

6. *Uſe.* As the Declivity of the Mountains gives Rapidity of Motion to the Rivers; ſo it gives Motion to the Winds and Air: For as the Condenſation of Vapours cauſeth an Inundation in the Waters; ſo the Rarefaction of the Vapours and Exhalations cauſeth an Inundation and Overflowing in the Air: And thoſe Lateral blaſts of Wind that come ſo ſtrong upon us, are only Waves of the Air; and the roaring Noiſe we oftentimes hear upon the Mountains, is only the breaking forth of the Winds upon the ſtill Body of the Air, and there putting of it into a rapid Motion, which is increas'd by the Deſcent of the Mountains; for Air and Water are the ſame in *Specie*, differing only in degrees of Thinneſs and Fludity,

7. *Uſe.* As the Mountains are the great Pillars and Supporters of the Earth, their Foundations all meeting in the Center, and Forming that Vaſt Subterranean Vault, which keeps the Central Fire from breaking forth; ſo they are the great-

eſt Ornament of its Superficies; giving not only a moſt pleaſant Proſpect over the Plains and Valleys, but terminating the Viſive Faculty with a grateful variety of Objects.

The poſition of Mountains.

The Mountains have their Natural Poſition either in Ridges or Cluſters; thoſe we ſee in Cluſters intermixt with great Dales, Gills and Valleys, were [at the firſt ſettling of Matter] all of an even Superficies; but their Joynts and diviſions conſiſting of Raff, Ragg, Chiver and ſuch confus'd Matter, without ſtrong Cills or Strata of Stones to bind them together, were by great Storms and Tempeſts of Rain, *&c.* but eſpecially by *Noah*'s Flood, broken and driven down into the Valleys; and from thence into the next adjacent Sea.

The Cauſe of Gills, Dales and Vallies.

And this is the Reaſon why ſome Mountains have a Perpendicular Riſe, why their Ribs and Sides lye Naked and Frightful, threatning to fall upon us; and theſe great Dikes and Joynts are either fill'd with Ponds of Water, which afford great plenty of Fiſh; or they are become pleaſant Valleys Gills and Dales; having a Fruitful Soil and the warmeſt Sun, by reaſon of its Beams being Reflected from all ſides of the Mountains.

CHAP. XIII.

Of Mountain Heaths, &c.

THE Mountain Heaths lye upon the Skirts of Mountains towards the Sea, their Conſiſtences and ſeveral Strata are rather of a Pinguid, Bituminous and Nitrous, than of a Hot and Sulphureous Quality; and they generally lead to Mines of Coals, which are the Pneumatick parts of ſuch Strata of Stones and Metals as are their upper Covers; the principal and more Pneumatical Ingredients whereof are Bitumen, Sulphur and Nitre; Bitumen gives the Flame, Nitre blows it up, and Sulphur gives the Heat.

The Ingredients of Coal.

Their croſs-cutting and dividing Dikes conſiſt of tough Clay and a mixture of confus'd Matter: Theſe Mountain Heaths were the ſecond dry Land that appear'd; for as the Sea did gradually draw down into its Channel, its unruly Waves drove up theſe leſſer Hills

Leſſer Mountains.

Hills we ſee upon the Skirts of the Mountains, and forc'd their Strata of Stones, Metals, *&c.* to have a Riſe towards them, thereby making a Channel ſo Spacious as might contain ſo Vaſt a Body of Water, and keep its Proud Waves within their proper Limits.

The Cauſe of the Chanel of the Sea.

Their Stones, Metals, *&c.* had their degrees of Incruſtation and Lapidifaction from the Central Fire.

CHAP. XIV.

Of the Plains and Valleys, &c.

THE laſt dry Land that appear'd, was the Plains and Valleys, which by the Depreſſion of their *Strata* ſank down into the Channel of the Sea; the Conſiſtences of theſe are rather of a Terrene and Nitrous, than a Pinguid Quality.

They afford us the beſt Free-ſtone as White, Grey, Red and Yellow; theſe Tinctures and Colours they receiv'd from thoſe different degrees of Concoction they had from the Central Fire; and the degrees of Lapidifaction and Induration they receiv'd from the Anteperiſtical Cold, and Petreſying Juices: Their Strata have an eaſie Dibb towards the Sea, ſometimes not a Yard at fifty; for as the Waters divided, their Strength abated, and the Flat Strata laid more level.

CHAP. XV.

Of the Channel of the Sea, &c.

AS the Valleys ſink down gradually into the Channel of the Sea; ſo the Channel is only a ſpacious Valley as far depreſs'd before the Surface of the Earth, as the Mountains and mountainous Heaths are advanc'd above it.

Its Conſiſtences are of a Terrene, Nitrous, Mercurial and Saline Quality, which is the reaſon the Sea-ſand will by a violent Heat run into a Glaſſy Subſtance. And why the moſt precious Pearls are found in that part.

CHAP. XVI.

Of the fluid Part of this Terraqueous Globe; and Firſt of the Sea, &c.

The Nature and Quality of the Sea.

THE Sea is that Vaſt Body of Salt Water contain'd in its proper Channel: Its the Sediment of the whole Maſs of Water, and therefore is Thicker and Heavier than either the Subterranean or Aerial Waters; which is the reaſon why it can neither penetrate the ſtraight Pores of Solid Matter, and ſo intermix with its ſweet Feeders; nor be elevated in Vapours by the Sun's Influence and fall down in Brackiſh Showers, which would be deſtructive as well of Plants and Herbs as Men and Beaſts.

The Seas are in a continual Flux and Reflux: The cauſe of which is the Rapidity and Weight of the Rivers continually preſſing in upon it from all ſides; and the Sea-waters being not only Thicker, but of a different Nature from the Thin and Sweet River-water, and having a Natural Appetite to Union, will not eaſily ſuffer

The Cauſe of the Seas Gibboſity.

Rivers to Incorporate with them, which is the true reaſon why the Rivers ſwells her up on both ſides of the Shoar, until the weight of the Salt-water over-balancing the weight of the Sweet-waters cauſeth the Sea to break in the middle, and by the greater weight and ſtrength of her Waves forceth the Invaders to retreat and fall back until the Salt-water has loſt its weight and Strength; and this is the cauſe of its Flux.

The Cauſe of its Flux.

The Salt-water having thus loſt its weight and ſtrength, the Rivers redouble their Force, and by the Rapidity of their Motion and weight of their Waves forceth the Salt-waters to a gradual and orderly Retreat, and to ſwell up into ſuch a height of Gibboſity that its weight again over-balanceth the weight and ſtrength of the Rivers; and this is the cauſe of its Reflux.

The Cauſe of its Reflux.

Thus the Flux and Reflux of the Sea is occaſion'd by the continual ſtrife between the Freſh-water and the Salt; and the Spring-tides and Dead-tides are occaſion'd by the gradual Increaſe and Decreaſe of the Reciprocation of their Motion; as we obſerv'd in the Spring or Balance of a Clock in giving her back Stroaks at every Tenth.

The Cauſe of Spring-Tides and Dead-Tides.

This continual Strife between the Freſh-water and the Salt cauſeth a con-conſtant Heat and Fermentation in the Sea; and this Boiling Fermentation cauſeth the Sweet River-water to fly up in Miſts and Vapours, which cauſeth an Atmoſphere to be round the whole Terraqueous Globe; and when theſe Miſts and Vapours are condenſed into Clouds they fall down in Showers of ſweet Rain upon the Surface of the Earth.

The Cauſe of the Seas Fermentation.

The effects and Uſes of the Seas Fermentation.

Thus tho' the Sea affords no Sweet-water, yet it is the only Medium which preſerves and maintains a conſtant communication and circulation between the Subterranean and Aerial Waters.

The Saline Quality of the Sea is occaſion'd by her being boiled up into a Sediment by the Central Fire; as well as thoſe Rocks of Mineral Salt that abound in her Channel.

The Cauſe of the Saltneſs of the Sea.

This Saltiſh Quality of the Sea does not only preſerve that vaſt Body of Water from Corrupting; but by cauſing her Water to be thicker and heavier than thoſe in the Freſh Rivers, it makes them more able to bear Burthens of much greater weight, and fitter to maintain a Correſpondence and Com-

Its Uſes.

munication of Trade between Land and Land, tho' at the greateſt diſtance.

The proportion which the Subterranean Water bears to the Sea.

Tho' the Sea and Main Ocean ſeems to contain a vaſt quantity of Water; yet it being compar'd to the Subterranean Waters which circulate through the Veins of that great Body, and are contain'd in the Strata and Pores of dens'd Matter; it will ſcarce bear the ſame proportion to them that One does to Seventy-two; for if the Computation of thoſe Learned Men be true who give Account that the Sea and Main Ocean cover but one half of the Globe, and that the Channel of the Sea is but one *German* Mile Deep [the Shallows being compar'd to the Deeps] then it would neceſſarily follow that if the Earth were Mathematically Round, it would cover the whole Globe only half a *German* Mile, which bears but Proportion to the Circumference of the Earth, as Half a Mile does to Twenty one thouſand ſix hundred Miles. Again, the Diameter of Twenty-one thouſand ſix hundred Miles being Seven thouſand two hundred, of which if we allow a Semidiameter to the Center or Belly of the Earth there will remain Three thouſand ſix hundred Miles for the Shell or

Body of it, to which Three thouſand ſix hundred the Fluid part or Superterranean Water can bear no leſs Proportion than One to an Hundred; which Computations being granted (and indeed they cannot reaſonably be deny'd) in the whole Body of the Earth, there will be found Thirty-ſix *German* Miles of Fluid Matter, which bears proportion to the Seventy-two Superterranean Seas or Oceans.

To ſtrengthen this Hypotheſis we may further add that in ſinking of Pits, the deeper we ſink, we raiſe the more Water; and that Stone or Mine of Coal which at Three Fathom Deep runs ſix Tubs of Water in one Hour, containing Thirty Gallons a-piece, at Six Fathom it will double the Number; and ſo on till the Water be Invincible; as in Hogſheads full of Water the higheſt Tap runs ſlowly, becauſe there is little weight of Water upon it; but the middle or loweſt Tap will run double and treble the Quantity in the ſame time, there being double and treble the weight of Water upon it.

Again, If we do further add that beſides the Water that circulates in the Veins of the Earth, there is ſo much of Water Intermix'd and Incorporated with the Fixt and Solid Matter, that if Stone, Metal, or Coal [when its Digg'd out of its Living Strata or Beds] be immediately expos'd to the Sun or Fire, it will in a ſhort time want of Weight above an Hundredth part, the Fluid part being Exhal'd.

Of the greater Veins of the Earth, *&c.*

The greater Dikes or Veins in the Earth, are Principally Four: The Firſt divides and changes the Mountain-Strata from the Mountain-Heaths: The Second divides thoſe ſeveral Strata of Stone *&c.* of which the Mountain-Heaths Conſiſt, from thoſe of the Plains and Valleys: The Third divides thoſe Beds and Layers of Matter on which the Plains and Valleys conſiſt, from the Channel of the Sea: The Fourth Runs under the Channel of the Sea, whoſe Side-Branches cauſeth all thoſe Submarine Quick-Sands which are the warm Beds wherein the Sea-fiſh ſcatter their Eggs for the Propagation of their ſeveral Kinds: As this, ſo all the reſt of the greater Dikes and Veins have their Side-Branches filling all the Strata of Stones, Metals, Minerals and Subterranean Earths with Water; ſo that where-ever we ſink into the Body of the Earth, as ſoon as we prick [with our Digging Inſtruments thoſe Kells of Clay *&c.* which divide the ſeveral Strata] we preſently raiſe their Feeders.

To raiſe new Rivers upon dry Ground.

And if any [who being prompt'd either to gratifie his Natural Curioſity, or gain ſome conſiderable Advantage to himſelf] would raiſe a new River upon dry Ground, let him go to the Foot of ſome Hill or Riſing Ground and begin a Level-Drift, which by croſs-cutting of the ſeveral Strata of that Riſing Earth, he will Tap and ſet at Liberty all the Feeders; and if he drive on till he ſhall croſs-cut with the Drift one Branch of thoſe greater Dikes, he will Raiſe a conſiderable River, which may turn to his great Advantage.

CHAP. XVII.

Of thoſe Preternatural Accidents that Diſturb and Interrupt the Courſe of Nature in this Material World &c.

HAving in the former Chapters given an Account of the Originals, Cauſes, Conſiſtences and Natural Uſes of the ſeveral Parts of this Natural Globe, as well Fix'd as Fluid : It will not be improper to ſubjoin an Account of ſuch Preternatural Accidents as ſometimes have diſturb'd, and may for the future interrupt the regular Courſe of Nature; and at the laſt ſo far deſtroy the Frame and Fabrick of this Material Part of it, as to render it uncapable of being an Habitable World.

And theſe are Earthquakes, Hurricanes, Vulcano's, violent Eruptions of the Subterranean Waters, as at *Noah*'s Flood; Stagnations of the Subterranean Air, cauſing the Springs and Mineral Feeders to ſink down into the Interior Parts of the Earth; Interruption of the Circulation of Vapours, and Rains upon the Earth (as in the days of *Eliſha* the Prophet); violent and Preternatural Thunders, ſuch as deſtroy'd *Sodom* and *Gomorrah.* Theſe and the like, are the Accidental Diſtempers that have happen'd in the Body of the Earth, and they ſeem Analagous to thoſe Fevers, Agues, Convulſions, *&c.* which interrupt the Healthful Conſtitutions of our own Bodies, and are ſometimes deſtructive of 'em: And as all the Diſeaſes and Diſtempers our Bodies are ſubject to, have their Original from Accidental Heats or Colds, which either Sublimates and Exalts our Animal Spirits into a Feveriſh degree of Volatility; or by Cold and Aguiſh Damps depreſſeth them into a degree of Stagnation.

So all thoſe Accidental and Preternatural Diſturbances that happen in the Courſe of Nature, have their original Cauſe, from the ſeveral Kinds and Natures of Damps, which are,

Either { *Central,*
Subterrene, or
Aerial;

And are of Quality

Either *Hot,*
Cold,
Sweet, or
Foul.

CHAP. XVIII.

Of the Central Damps: Their Cauſes, Natures, and Dreadful Effects upon this Globe.

A Subterranean conteſt between Fire and Water.

THE Subterranean Vault being filled with a confus'd Maſs of undigeſted Matter, Conſiſting of Sublimat'd Sulphur, Bitumen and Nitre, whenever it happens that there ariſeth a War between theſe angry Volatiles, and their Fluid Neighbours (*viz.*) the Subterranean Water and Air, which Circulates through thoſe greater Veins that environ this large Vault; and do not only Feed and Nouriſh that Infernal Smother, but keep and confine it within its own Boundaries, that it break not forth in violent Eruptions upon the fixt Body of the Earth,

As ſoon as this Inteſtine War commenceth, theſe Active Volatiles of Sublimated Sulphur, Bitumen and Nitre, collect and aggregate into great Bodies.

1. And when theſe diſcharge in the Central part of the Vault, the Nitre which is the principal Cauſe of the grand Effort or *Flatus*, dilates and expands its ſelf on all ſides, upwards and downwards Indifferently: And this violent Effort or *Flatus* cauſeth an univerſal Concuſſion of the whole Globe.

A Concuſſion of the whole Globe.

2. When the Damp gathers towards the Circumference of the Vault, and there diſchargeth it ſelf, the grand *Flatus* hath its Tendency upwards; and ſometimes cauſeth a Concuſſion of one half of the Globe, without any Eruption of Fire.

A Concuſſion of half the Globe.

3. When the Damp Fires upon ſome Claſs of the Superincumbent Strata, it either ſplits them, making Cracks and Chaſms in the Exterior parts of the Earth for ſome Miles in length, which at the inſtant of the Shock openeth, and in the Interval between the Shocks cloſeth again: [Of this Kind was that Crack

A Local Earthquake.

Crack or Chaſm which open'd and ſwallow'd up the Tents of *Korah*, *Dathan* and *Abiram*; and no doubt, but the Shock ſtruck a Terror into the whole Camp]

New Mountains and Ponds.

Or if the grand *Flatus* be very Strong and Vehement, it either elevates the whole Claſs above the Superficies of the Earth, forming a new Mountain; or elſe it ſinks down into the Vault, and the vacant place is immediately fill'd with Water [not from Dr. *Woodward*'s Abyſs] but from the Veins of the Earth which break into it.

[illegible]

Of Hurricains and their Effects.

4. When the Damp fires near or upon ſome of the great Joints or Clifts of the Earth, the *Flatus* purſues all the Windings and Turnings of theſe Joints and Clifts until it break forth in Dreadful Hurricanes; either under the Sea, occaſioning moſt Horrible Diſorders and Perturbations, raiſing its Surface into Prodigious Waves, Toſſing and Rowling them about in moſt ſtrange Whirlpools, Overturning and Swallowing up Ships in an inſtant: And upon the dry Land Overturning Cities, Towns, Blowing up Mountains, *&c.*

Tho' theſe Effects of the Subterranean Nitre when Rarified and Dilated by the Central Flame be very Dreadful; yet if theſe Fiſſures and Spiracles through which they get a Vent and break out upon the Earth had been Perpendicular [as Dr. *Woodward* Conceits] they wou'd have Deſtroy'd the whole Surface of it.

For then every one of theſe leſſer Damps or Squibs which daily take Fire in the Subterranean Vault, wou'd have broken out upon us. 1.

And the greater Damps being Fired wou'd have Blown up not only the Inhabitants of the Earth; but their Houſes with its Superficies into the Air; for the deeper the Fiſſure or Spiracle is, if it be Perpendicular in a ſtreight Line, the more Strength and Impetuoſity it gives to the *Flatus*, as we obſerve in Guns and Fuzees. 2.

Again, The very Sulphurous Exhalations which wou'd have aſcended through theſe Perpendicular Fiſſures without interruption, wou'd [with their Noiſome Smell] have Suffocated and Stifled thoſe Animals that Live by Reſpiration, and wou'd have afforded Matter for continual Thunder in the Air.

It was then moſt agreeable with the State of this Habitable Globe that theſe Fiſſures or Joints of the Earth ſhou'd have their Poſition from the Surface to the Center in crooked Lines with various windings and turnings, openings and cloſings; not only for ſecuring us from thoſe dangerous Effects of the Central and Terrene Damps; but alſo for the better and more commodious Communication of the Subterranean Waters through the Flat Strata of Matter.

Dr. *Woodwards* notion of perpendicular Fiſſures is a miſtake in obſervation.

And Laſtly, That the Subterranean Waters by following of the windings and turnings of theſe greater Fiſſures might have a longer Journey to the Sea, and thereby ſupply the Inhabitants of the Earth with ſweet Waters at a more Commodious and Convenient Diſtance.

Theſe *Phenomena* of Central Damps, and that they are the only cauſe of all thoſe Univerſal Earth-quakes that have happen'd in this Natural World, being wholly new, and the World not yet accquainted with them, may at firſt ſight ſeem only the Products of Fancy, or meer Conjecture; yet if Seriouſly and Impartially enquir'd into, will be found Grounded upon ſuch Reaſon, as cannot without a prejudic'd Opinion be eaſily deny'd.

For it cannot be imagin'd by any who have made it their buſineſs to underſtand the Structure of the Earth, thoſe ſeveral Claſſes of Solid and Denſe Matter on which it conſiſts, the windings and turnings of thoſe Dikes and Partitions which divide them and are the Subterranean Water Courſes, that there ſhou'd be Magazines of Subterranean Gunpowder lodg'd in Infernal Cavities round the whole Globe, and that there ſhou'd be Trains laid from one Collection to another, and that all theſe Trains ſhou'd take Fire through all the Subterranean Rivers in one inſtant of Time. Neither can it reaſonably be ſuppos'd that there ſhou'd be a Concuſſion of the whole or half, or any conſiderable part of the Globe, by one Subterranean *Flatus*; but what is from the Central Vault.

Again, The Conſiſtences of the greateſt part of the Earth being rather of a Cold, Terrene and Mercurial, than of a Bituminous Nitrous and Sulphureous Quality, it cannot be ſuppos'd that thoſe parts of the Earth which afford no quantities of this Natural Gunpowder ſhou'd ſuffer a Concuſſion or Earthquake, but from theſe Central Damps.

Beſides thoſe Miners who have ſunk deepeſt into theſe Occult Regions, do from their own Experience aſſure us, that there are no Grotto's or Cavities above an Hundred Fathoms deep, unleſs in thoſe Mountainous Countries where the Conſiſtences are of a Sulphurous and Nitrous Quality, affording plenty of Natural Gun-powder, which being Fir'd cauſe all thoſe *Vulcano*'s we Read of in Hiſtory.

C H A P.

CHAP. XIX.

Of Terrene Damps, and their Dreadful Effects upon this Globe &c.

TErrene Damps have their Original either from Heat or Cold, and are either Fiery or Wateriſh: Thoſe which have their Original from Fire, are of the ſame Nature with thoſe Central Damps we have given Account of.

As all Local Earth-quakes do more frequently happen in the Mountainous Countries, than in the Plains and Valleys; becauſe all the greater Dikes, Joints and Veins of the Earth contract and meet there: And the *Flatus* which is the occaſion of the Shock makes its way by what paſſage ſoever it can get Vent.

But theſe Mountainous Countries eſpecially, which yield great ſtore of Sulphur, Bitumen, and chiefly Nitre [theſe Minerals affording the greateſt plenty of Natural Gun-powder] are moſt injur'd by thoſe dreadful Shocks, becauſe thoſe Mountains whoſe Natural Conſiſtences are of ſo Hot and Fiery a Quality are commonly very Cavernous; and their greater Joints and Fiſſures, as well as ſtrong Strata having by frequent Concuſſions and Earthquakes loſt their Natural Feeders, are become the moſt proper Receptacles for thoſe Fiery Stores to be lodg'd ~~in until~~ either the Central Fire, or their own Natural Heat being contracted into a Point, Diſcharge firſt the loweſt Damp, and the reſt by Trains like ſo many Subalterns diſcharge in Courſe, and ſometimes for ſeveral Months together, till the Subterranean Gun-powder be all ſpent.

Of Burning Mountains.

And theſe Burning Mountains ſuch as *Ætna*, *Veſuvius*, *Hecla*, and others, are only ſo many Spiracles or *Vulcano's* ſerving for the diſcharge of theſe Subterranean Damps, which diſgorgeth Flames of Fire, and Stones of great Weight and Subſtance, Showers of Sand and Rivers of melted Minerals; and yet theſe Mountains by thoſe *Vulcano's* loſe nothing of their Height or Magnitude, all theſe Eruptions being Recruited out of the great Magazine of Natural Gun-powder contain'd in the Infernal Vault.

Vulcano's.

Beſides theſe Damps of a Fiery Nature contain'd in the Interior parts of the Earth, there are others which ſometimes happens in the Exterior parts of it; ſuch as thoſe Fiery Damps in Colleries are only the Perſpirations of Sulphur and Nitre out of the Cole, Wall or Mine, Collected into a Body; and theſe either take Fire at a Candle, or like ſo many dry Exhalations receiv'd into the Body of a Cloud, and diſcharge like Thunder ſhakes the Earth about the Collery, kills the Miners, and have other Dreadful Effects.

Her damps in Colleries.

Their Effects.

To theſe we may add thoſe Preternatural Ebullitions and Eruptions of Subterranean Waters, which *Moſes* calls the *Breaking up of the Fountains of the great Deep*: And theſe whenever they happen upon the Earth [as at *Noah's* Flood] are occaſion'd by an Univerſal Fermentation and Dilation of the Central Fire, which gaining ground upon their Fluid Neighbours, force them into a moſt Rapid Motion through all the Subterranean Veins, and conſequently cauſeth thoſe violent Eruptions of Water in all the Springs, Rivers, Joints and Fiſſures of the Earth.

Violent Eruptions of Water.

Of water Damps.

Sometimes the Circulation of the Subterranean Waters ſtagnates and ſinks down into the Interior parts of the Earth; the Springs and Rivers dry up, as in the days of *Eliſha*: And this is occaſion'd by the ſtifling and damping of the Central Heat, the Circumambient Waters prevailing upon it.

Sometimes the Circumbient Air which Circulates in the Exterior parts of the Earth, eſpecially the Caverns, Joints and Concavities of Rocky Stones and other Metals [and is the only cauſe of the Eruption and Motion of Springs, Rivers, *&c.*] Damps and Stagnates, which forceth the Springs and Eruptions of Waters to ſtand back, and fill thoſe Caverns and Joints, from whence they flow until the weight of the Waters break the Damp, or rather Damm of Stagnated Air; and then follows Eruptions and Overflowings of Springs, Rivers, *&c.*

An Air Damp.

This kind of Damps I have met with ſometimes in Colleries, where the Water made way for it ſelf in ſuch Joints and open Cloſers, as it met with in the under Cills; eſpecially Lime-ſtone, which is of all Stone the moſt Jointy and Open.

And when the Air in theſe open Joints and Cavities was dampt, the Waters ſtood back in the Working, and forc'd the Miners out of the Pit, until the weight broke the Damp, and then the Waters Drain'd.

A ſweet Damp.

This Damp moſt frequently happens in the Summer Months, when the Ambient Air is Thick with Hot and Fiery Exhalations, and the Effluvia of ſweet Bloſſoms, eſpecially of Peas and Beans. And this the Miners call the ſweet Damp.

This Stagnation and Damping of the Subterranean Air is [in all probability] the cauſe of the Annual Over-flowing of the River *Nilus*, the Horary Over-flowing of the Spring at *Gigleſwick* in *York ſhire*, the Drumming in the Well at *Bantry*, &c.

And theſe being by Men of Learning reckon'd among the *Magnalia Naturæ*, we ſhall enquire more particularly into the Cauſes of them: And firſt of the Over-flowing of *Nilus*.

The over-flowing of *Nilus*.

Nilus is one of the Nobleſt Rivers in the World, and is famous not only for the long Courſe it takes through *Ethiopia* and *Egypt*, which is ſuppos'd to be Three thouſand Miles before it empty's it ſelf into the Miditerranean

Sea; but alſo for its Over-flowing and Fertilizing that Low and Level Country, ſupplying in it the want of Rain.

'Tis believ'd by Men of great Learning that this Yearly Over-flowing of that Country is occaſion'd by the great quantities of Snow diſſolv'd upon the Mountains, from whence it takes its Riſe; and theſe [as Geographers give Account] are that vaſt Ridge of Mountains, which for their Height bear the Name of *Montes Lunæ*, as if their lofty Tops waſh'd their Heads in the Moon's Wateriſh Vortex.

Others are of Opinion that the Yearly Over-flowing of that River is caus'd by thoſe great Rains which fall every Spring in the higher *Ethiopia*: But if either the Diſſolution of Snow, or Inundations caus'd by the falling of thoſe Spring-Rains, were the true Reaſon, *&c.* they wou'd alſo cauſe the other Rivers in thoſe Countries to Overflow their Banks at the ſame time; which is ſo far from being Obſervable, that when *Nilus* Over-flows, the other Rivers are at a very low Ebb.

The Cauſe then of this Yearly Overflowing of *Nilus*, which begins about the 17th of *June* and continues until the 6th of *October*, ſeems to be a Subterranean Damp, which Yearly Stagnates the Circulation of Air in theſe vaſt Rocks and open Strata, from whence thoſe Rapid Springs and Feeders flow, which are the Heads of that Famous River.

The Subterranean Air being Dampt, the Springs and Mineral Feeders are forc'd to ſtand back and fill all thoſe vaſt Concavities and Hollows for ſeveral Miles upon the Side-riſe, and ſome Miles upon the Top-riſe of thoſe Rocks and Metals; until the weight of ſo vaſt a quantity of Water [which may be compar'd to a leſſer Sea] breaks the Damp or Damm of Stagnated Air, and then the River begins to Over-flow, and continues until the Waters be ſpent, and the Damp gathers again.

Its obſerv'd that when the River *Nilus* begins to Over-flow its Banks, that great Plagues break out in *Cairo*, which ſeems to be occaſion'd by thoſe groſs Vapours and Mineral Exhalations that ariſe from ſo vaſt a quantity of Stagnated Water, which [whilſt by its Motion, its Purging of it ſelf and recovering of its Sweetneſs] fly about, corrupt the Air, and cauſe Infections.

The over-flowing of the *Gigleſwick* Spring.

This Subterranean Damp is likewiſe the cauſe of the Horary Over-flowing of the Spring at *Gigleſwick* in *Yorkſhire*; for this Spring being the feeder of a Lime-ſtone Rock near Thirty Yards Perpendicular in Height, which breaks out at the Foot of it; ſo often as the Circulation of the Air in the Rock is dampt, the Spring runs very ſlowly, and when the weight of the Water has broken the Damp, it Over-flows, and this Flux and Reflux is once in every Hour.

I obſerv'd my ſelf, that before the Waters began to Flow there was a knocking in the Rock, and this was cauſed by the preſſing of the Water upon the Damp before it broke.

The drumming Well at *Bautry*.

The ſame is the cauſe of that Drumming in the Well at *Bautry*, which the Inhabitants of the Town told me never happen'd but againſt the change of Government: This Well is obſerv'd to be for the moſt part Dry, which is occaſion'd by the feeders ſtanding back; the drumming noiſe is occaſion'd by the Waters preſſing upon the Damp, and the Hollows of the Well; for as ſoon as the Damp is broken, the Well fills with Water and the Drumming is over.

This occaſions the Report of Under-ground Spirits, which Miners call Mineral Spirits; and they obſerve that theſe Spirits give notice, by Knocking or Groaning before the Mineral Vein be diſcover'd : I have obſerv'd my ſelf that in a new Collerie, when the Workmen were near the Coal (and only the Kell which kept the feeder of it unbroken] there wou'd have been a ſort of Knocking, Sighing or Groaning heard in the Vein, which was only occaſion'd by the weight of the Water lying in the Coal, and preſſing forward for more room and liberty; for as ſoon as the Coal was prick'd, the Water roſe in the Pit, the Knocking was over and the Mineral Spirit Conjur'd.

Mineral Spirits.

Of this kind alſo is that Damp which the Miners ſometimes meet with in their ſinking of deep Pits and new Works; where a Cloud of Breath or Sweat perſpiring from the Bodies of the Workmen, will ſtifle the Circulation of the Air, and not ſuffer the Candles to Burn. This Damp will ſteal the Breath inſenſibly from the Workmen and ſtifle 'em.

Foul Air.

There is yet another kind of Damp the Miners complain of, which they call the foul or ſtinking Damp; and this is cauſed by the breaking out of corrupted Air from old cruſted Works. This, if not prevented, will Kill and Stifle the Workmen.

The Aerial Damps will be treated upon in Meteotologie.

Having given an Account of the Cauſes, Natures and Effects of Damps, and ſuch Preter-natural Accidents as have and may diſturb and interrupt the regular Courſe of Nature; we cannot but make an Enquiry into the Cauſes of *Noah's* Flood, the Seaſon of the Year when it happen'd, and the Alterations and Devaſtations it made upon the Earth,

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CHAP.

CHAP. XX.

Of Noah's *Flood, its Cauſes, the Seaſon of the Year when it happen'd, the Effects and Alterations it made upon the Earth.*

IF theſe two Learn'd Men (*viz.*) Dr. *Burnet* and Dr. *Woodward* had underſtood better the Structure of the Terraqueous Globe, the Natural Conſiſtences of it, the Cauſes, Natures and Effects of Damps, and that thoſe Subterranean Waters which Circulate through the Veins of the Earth bears proportion to Seventy two Oceans, they wou'd have diſcover'd ſuch a quantity of Water as wou'd have caus'd an Univerſal Deluge without the Conceit of a Central or Subterranean Abyſs.

Which Hypotheſis [tho' manag'd with the greateſt Artifice of Invention and Oratory] when ſeriouſly enquir'd into, will be found to have very little of Truth in the bottom of it; for it ſeems not only inconſiſtent with the Original Settlement of Matter, as we have obſerv'd already; but alſo with Dr. *Woodward*'s Hypotheſis concerning the re-ſettling of the fluid Matter diſſolv'd by the Deluge which he poſitively aſſerts to have been according to the Rules of Specifick Gravity; the heavieſt ſubſiding the loweſt.

1. This Hypotheſis if taken for granted, we muſt neceſſarily conclude from it, that all thoſe kinds of ponderous Ore, and heavieſt Rocks of Iron, Stone, Marble, *&c.* would have ſunk down into the Central Vault and fill'd it up.

2. That the reſt of the Fix'd Matter being by ſome degree lighter would have ſpread their Solid Strata uppermoſt:

3. And that the Fluid Waters being by ſeveral degrees lighter than the Fix'd Matter, would have cover'd the whole Terrene Globe, and conſequently wou'd have caus'd an Univerſal and perpetual Deluge upon the Earth.

But ſuppoſe it poſſible to improve the ſtrength of Imagination to ſuch a height, as to fancy that there was Originally, and is ſtill, a vaſt Abyſs of Hot Water contain'd in the Center of the Earth; it cannot be ſo eaſily apprehended by what Power or Means this vaſt ſubſtance of Water ſhou'd be put into ſo high a degree of Fermentation and Commotion, as to cauſe an Univerſal Diſruption and Diſſolution of the Earth, as Dr. *Woodward* conceits; for although that Fire placed under a Pot fill'd with Water, will by emitting of its fiery *Globuli*, and mingling them with the Water, cauſe ſo violent an Ebullition and Commotion in it, as to raiſe the Cover and overturn it; yet it cannot be ſuppos'd that either that uniform and conſtant Fire or Heat, diſſeminated through the Body of the Earth; or the external Heat of the Sun's warm Influence can produce any ſuch Effects; becauſe Fire and Nitre do Naturally exert their power upwards and ſideway, but never downward, but when it is ſo pent up that it can get no other Vent: And when even Gun-powder is forc'd to make its Effort upon the Waters, the ſtrength of its *Flatus* does little Execution, being preſently ſtifl'd. We ſhall therefore ſuſpend further Enquiry about this matter, until Dr. *Woodward's* larger Volume be made publick, and endeavour to find out ſome other Cauſes by which that Univerſal Deluge which happen'd in *Noah's* time might be effected in an other way, and grounded upon fair probabilities of Reaſon and Certainty.

1. Firſt then, no doubt but God Almighty was the Principal Cauſe, the Sins of Mankind the provoking Cauſe, and the Subterranean Superterranean and Nubiferous Waters were the immediate Inſtruments of it.

But how all theſe divided Waters ſhou'd be re-united and gather'd into ſuch a Body as was ſufficient to cover all the Tops of the Mountains Fifteen Cubits high, as *Moſes* gives Account, is the only matter of difficulty to be encounter'd.

In Order to which, I ſhall not Entertain you with a long Story of the Opinions of Learn'd Men about it, nor undertake to ſhew you upon what improbable Grounds and inconſiſtences the Theoriſt and Dr. *Woodward* have eſtabliſh'd their Hypotheſis of it; but having diſcover'd a Vaſt and Portentous Body of Water Circulating in the Veins of the Earth, bearing Proportion [as I have obſerv'd] to Seventy-two Oceans, and ſeveral Oceans of Water more floating in the Clouds and rarified into thin Air [that it might be a fit Medium for Reſpiration, *&c.*] my Adven-

ture

1. ture, ſhall be firſt to ſhew how, and by what Cauſe, the Subterranean VVater was rais'd above Ground, and the thin Air was condens'd into VVater; how both join'd with the Sea, and caus'd the Deluge.

2. And then Secondly, I ſhall give Account how the Waters again divided; how all things return'd to their Natural Courſe; and by what Gradations the dry Land appear'd: And more than this is not neceſſary to make and eſtabliſh a clear Hypotheſis of the Univerſal Deluge.

1. Firſt then, we may conclude, from Arguments of the greateſt probability imaginable, that the collection and reuniting of ſuch a quantity of Water as was ſufficient to Drown the World, was caus'd by an Univerſal Damp that happen'd at that time in the whole Courſe of Nature.

For, Firſt, all the Central Fire by a Preternatural Fermentation and Dilation of thoſe angry Volatiles on which it conſiſts, gain'd ground upon its Fluid Neighbours, thoſe Subterranean Waters which circulate in the Body of the Earth, and forcing them into a moſt rapid Ebullition and Commotion, caus'd moſt violent Eruptions in all the Veins, Joints, Fiſſures and *Hyatus's* as well under the Channel of the Sea, as in all the parts of the Earth's Surface.

The meaning of theſe words, the Fountains of the great Deep were broken up.

Theſe violent Eruptions of the Submarine and Subterranean Waters, which *Moſes* calls the *breaking up of the Fountains of the great Deep*, ſwell'd up the Sea into ſuch a height of Gibboſity that it forc'd the Rivers to ſtand back, and riſe as high as their Fountain Heads, which covering all the dry Land, excepting the Tops of the higheſt Mountains; the Aerial Damp caus'd by the Moon's wateriſh *Vertex* preſſing down the *Vortex* or Atmoſphere of this Terraqueous Globe, did not only interrupt the Communication of the Subterranean and Aerial Waters, by cauſing the raiſing and circulation of Vapours to ceaſe; but alſo by condenſing the moiſt Air into wateriſh Clouds, which falling down in continual Spouts for Forty Days and Nights together [the Air being without Motion, conſequently neither able to break nor ſupport them] the Tops of the higheſt Mountains were cover'd Fifteen Cubits, as *Moſes* gives Account, *Gen.* 7. 15. and theſe portentous Rains which fell in

The Cauſe of the Aerial Damp and its Effects.

What is meant by the opening of the Windows of Heaven.

Spouts; *Moſes* expreſſeth by the *opening of the Windows of Heaven*, Gen. 7. 11.

Thus the divided Waters being re-united as they were in the Creation, and the circulation of Vapours broken by the ſtagnation and damping of the Aerial Regions, the whole Surface of the Earth was cover'd, until God caus'd a Wind to paſs over the Earth, which breaking the Aerial Damp, the Rain ceaſed, the Subterranean Waters ſunk down into their Veins, recover'd the Ground which the Central Fire had gain'd from them: The Rivers forc'd the Sea to retreat back to her own Channel, and returning to her regular Flux and Reflux, the Vapours aroſe and repair'd the Air again with Clouds and Moiſture, and all things return'd to their Natural Courſe. It cannot be imagin'd how the Heart of *Noah* and his Family was reviv'd when the Sun began to ſhew its Face again, and the Rain-Bow appear'd in a broken Cloud.

The meaning of the Wind which God cauſed to paſs over the Earth, and its effects.

For *Noah* being undoubtedly as well a Natural Philoſopher as a Prieſt in his Family, the appearance of a Rain-Bow [which after a long Storm is an infallible ſign of Fair-weather] cou'd not

What the Rain-bows appearing in the Clouds did ſignifie.

but encourage him with hopes that the Damp was broken and the Storm over.

God therefore made a Covenant with *Noah* and his Poſterity that there ſhou'd never be an Univerſal Deluge upon the Earth, *Gen.* 9. 23. and to eſtabliſh this Covenant with him, he made the Rain-Bow [being a Wateriſh Meteor, and after a Storm a ſign of Fair-weather] a moſt proper and ſignificant Sign and Seal of that Covenant [*viz.*] a Sign commemorative of the paſt Deluge, and a Seal confirmative that there ſhou'd never be any more Flood to deſtroy the Earth. And no more than this ſeems to be meant by the appearance of the Rain-Bow in the Cloud.

CHAP.

CHAP. XXI.

Of the Seaſon of the Year when the Deluge happen'd.

A Refutation of Dr. *Woodard's* Hypotheſis, *&c.*

DR. *Woodward* declares his Opinion, that the Deluge commenc'd in the Spring Seaſon in the Month we call *May*; but upon what Reaſon he grounds this Conceit I cannot eaſily apprehend.

For the Fruits of the Earth being then but Growing; and the former Autumn Seeds being deſtroy'd by the by paſt Winter, Nature wou'd have been forc'd to a Spontaneous Production of the ſeveral kinds of Vegetables as had loſt their Seeds. And when the ſeveral Species of Animals which were preſerv'd from the Flood, had liberty to go abroad and ſeek Food, they wou'd not eaſily have found it in *November* and *December*, which Months according to his Hypotheſis were the Seaſon when the Waters abated, and the Beaſts order'd to leave the Ark, and ſeek their own Food where they cou'd find it.

The time when the Deluge commenced.

It ſeems then moſt probable that the Univerſal Deluge commenc'd in that Month we call *Auguſt*, when the Seeds of all Vegetables were full Ripe, and ready to Sow themſelves in the Fertile Soil, that when the Deluge was over, and the dry Land had for ſome time appear'd, and had receiv'd Heat and Incruſtation from the warm Influence of an approaching Sun: Theſe Seeds being mingl'd with a warm and wateriſh Soil, might be ready to Spring up and ſupply the Animals with pleaſant Food.

We likewiſe obſerve, that when the Dove was ſent forth out of the Ark the Second time, ſhe brought with her a Leaf pluck'd from an Olive-Tree: When ſhe was ſent forth a Third time, ſhe return'd no more, having found Food upon the Earth, which cou'd be no other than Corn floating upon the Surface of the wateriſh Earth.

Again, *Moſes* gives us an Account that in the Firſt Month, which probably anſwers our *January*, the Waters were dry'd up from the Face of the Earth; and upon the 27th Day of the Second Month, which ſeems to be our *February* or *March*, God order'd all the Beaſts in the Ark, to be turn'd out to Graſs, and ſhift for themſelves.

Again, we find daily not only great Trees of ſeveral Kinds [as Oak, Birch, *&c.*] rooted up by the Roots, and lying upon Heaps Bury'd and Entomb'd in great Moſſes where they never had grown; but had been brought thither by that general Devaſtation made by the Deluge: But Hazel-Nuts, whoſe Kernels are as freſh as if they had now been growing upon the Trees. Theſe Nuts having been ſcatter'd there by the Deluge, and having layn there bury'd and embalm'd in thoſe Bituminous Moſſes to this Day; and in all probability might have been continu'd as long as the Earth. From theſe Obſervations, we may reaſonably infer, that the Flood commenc'd when the Seeds of all Vegetables were Ripe for the propagation of their Kinds.

We may yet farther add, that all Damps as well Subterranean as Aerial, moſt frequently happen in the Autumn Seaſon.

CHAP. XXII.

Of the Alterations which Noah's *Flood made in, and upon the Earth.*

I cannot agree with Dr. *Woodward's* Hypotheſis, wherein he aſſerts that during the time of the Deluge, whilſt the Water was out upon, and cover'd the Terreſtrial Globe, all the Stone and Marble with the Metals and Mineral Concretions, *&c.* of the Antediluvian Earth, were totally Diſſolv'd; and their conſtituent Corpuſcles all disjoin'd, their cohæſion perfectly ceaſing, *&c.*

Dr. *Woodward's* Hypotheſis concerning the effects of the Deluge Refuted.

This Hypotheſis ſeem inconſiſtent with Senſe and Experience, as well as Natural Reaſon and Scripture [eſpecially the *Moſaick* Account of the Deluge.] For Firſt,

1. Experience tells us, that there is no ſuch Diſſolving power or quality either in the Subterranean or Aerial Waters as to effect ſuch a Diſſolution as he deſcribes, and theſe were the im-

immediate Inſtruments of the Deluge.

It cannot reaſonably be ſuppos'd [without a Miracle] that all the Solid conſiſtences of the Earth ſhou'd be diſſolv'd into a Fluid ſubſtance; and again reſettle and receive their ſeveral degrees of conſolidation in ſo ſhort a time as the Flood continued upon the Earth. 2.

If the Earth ſuffer'd by the Deluge a Total and Univerſal Diſſolution, then all thoſe form'd Stones and Shells which the Dr. conceives to be Marine Bodies born forth of the Sea, by the Univerſal Deluge, and left behind at Land when the Waters return'd, wou'd have loſt their Forms and Shapes, theſe being not only found upon the Surface of the Earth; but in the Interior parts of it, incorporated with ſeveral ſolid Strata of Stone, as well upon the Mountains as Plains. 3.

If not only the ſolid Foſſils; but alſo Sand, Earth, Animate Bodies, parts of Animals, Bones and Teeth, Shells, Vegetables and parts of Vegetables, 4.

made one common and confuſ'd Maſs, diſſolv'd into a Fluid ſubſtance: Then the whole Species of Vegetables, Root and Branch, Stock and Seed, wou'd have been loſt, and Nature forc'd to a Spontaneous Production, as at the Creation.

5. The Re-ſettling of the confuſ'd fluid Maſs, according to the Rules of Specifick Gravity, the heavieſt ſubſiding loweſt, is a grand miſtake in Obſervation; and by the ſame Rule, the Earth wou'd have been cover'd with a Perpetual as well as Univerſal Deluge, as we have already obſerv'd.

6. As this Hypotheſis is inconſiſtent with Senſe, Reaſon and Experience, ſo is it with the Account *Moſes* gives of the Univerſal Deluge; for he tells us that there were Mountains during the prevalency of the Waters, and that the Flood cover'd the Tops of them Fifteen Cubits. He tells us likewiſe, that the firſt dry Land that appear'd, was the Tops of the Mountains, and that the Ark reſted upon the Mountains of *Ararat*. If this Account be true, as undoubtedly it is, the alterati-

ons which the Deluge made were only in the Surface and Exterior parts of the Earth: And thoſe places of Scripture which ſpeak of deſtroying the Earth, are to be underſtood, only the outward Coat or Superficies, and not the Mineral part of it. And neither was the Surface of the Earth altogether deſtroy'd, as appears by the Dove's Bringing of an Olive Leaf in her Mouth pluck'd off; and by all Living Creatures in the Ark, being turn'd to Graſs and to ſhift for themſelves in the Seventh Month after the Deluge commenc'd, which might be in the beginning of our *March*.

The Alterations, which the Deluge made upon the Earth, being only in the Exterior part of it, I ſhall take notice of ſuch as are moſt Remarkable and Obvious. As Firſt,

The Alterations which the Deluge made upon the Earth.

1. The uppermoſt Strata upon the Tops of Mountains, were broken up and tumbl'd down to the Skirts of them, and theſe we find lying upon their Inland ſides in great confuſion, with falſe and counter Dibs and Riſes, like thoſe Flags and Boards of Ice, thrown out of the Water upon the breach of a Storm.

The

2. The Joints of the Mountains conſiſting of Rag Raff and Chiver, and not being bound together with ſtrong Cills of Stone, were broken, as we have obſerv'd already.

3. The Courſes and Channels of Rivers were enlarg'd, which caus'd all theſe pleaſant Gills and Dales with their Rapid River running through the midſt of them.

4. The whirling about of the Water, caus'd all thoſe Hills or leſſer Mountains, whoſe conſiſtences are only Sand, Gravel, or broken Strata of Stone *&c.*

5. The Deluge rooted up all the greater Trees, ſome of which we find bury'd and embalm'd in great Moſſes, as well upon the Mountains as in the Valleys.

6. The Surface of the Plains and Valleys was fertiliz'd by the Deluge, by its leaving a prolifick Slime and fæculent Mud upon it.

7. Theſe Alterations were not caus'd by the riſing, but the decreaſing Wa-

ters; for whilſt the Waters were a-riſing, the Aerial as well as the Subterranean Damp continu'd, and the Subluniary Courſe of Nature was Stagnated; but as ſoon as God caus'd a Wind to paſs over the Earth, the Damp broke, and the Waters were put into a Moſt violent Perturbation and Commotion; which was the only cauſe of all thoſe Alterations and Devaſtations.

The time when theſe alterations were made.

The End of the Firſt part.

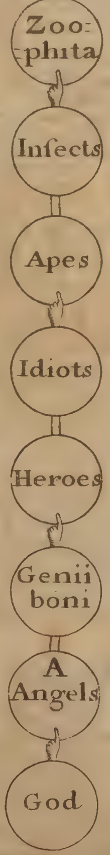
OF

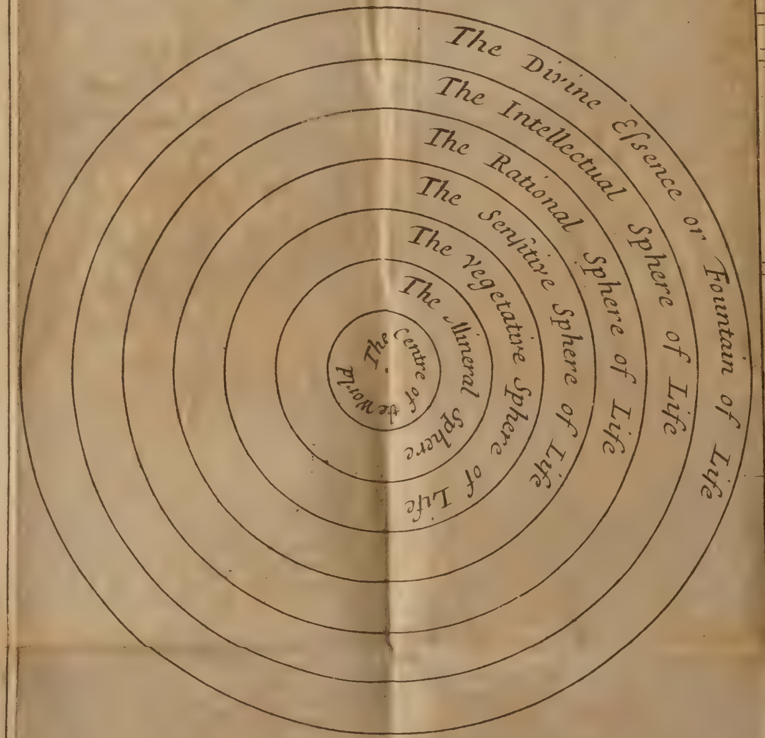
OF THE ORIGINALS, Degrees and Propagations OF LIFE.

PART II.

A Scheme wherein the several degrees & Concatenations of Life are explained

Animalia Intermedia.




The Divine Eſsence or Fountain of Life
The Intellectual Sphere of Life
The Rational Sphere of Life
The Senſitive Sphere of Life
The Vegetative Sphere of Life
The Mineral Sphere
The Centre of the World

As the higheſt degree of Vegetation in the **Zoophita** *makes a near Approach to the loweſt degree of Sensation in the Insects. So The higheſt degree of Senſation in* **Apes** *&c. makes a near Approach to the loweſt degree of Rationality in* **Idiots** *&c. As the Higheſt degree of Rationality in the* **Heros.** *and Speritualiz'd Rationals makes a near Approach to the* **Boni Genii** *or loweſt order of Angels: So the higheſt degree of Intellectuallity in the Angelick Nature, makes a near Approach to the* **Divine Eſsence.**

Part 2d.

PART II.

CHAP. I.

Of the Plaſtick Spirit in Matter, and its natural Products.

THE Plaſtick and Vivifick Powers being the firſt Principles of Life in this Natural World, which forms the firſt Lines, and kindles the firſt Sparks of the vital Flame:

It will be neceſſary in order to our preſent Deſign, [which is to give a ſhort Account of the Originals, Degrees and Propagations of Life in this Natural World] to deſcribe the Natural Operations and Products of theſe two firſt Principles, and to ſhew how they act Severally, as well as in Conſort.

The Plaſtick Spirit in this World of Matter, is a Subtle Saline Volatile, which [whilſt Matter was in a Fluid Subſtance] diffus'd it ſelf through all the Lax *Strata* and conſiſtences of it.

And as that Acid and Saline Humour in the Stomachs of Animals, together with the Vital Flame, by ſeveral degrees of Concoction and Depuration, ſeparates the more Pure and Spirituous parts of the Nouriſhment from the Craſſer and more Excrementitious parts of it, or as that Acid and Saline Rennet ſeparates and coagulates the more Pure, Spirituous and Oyly parts of the Milk from the Wateriſh and more Terrene; ſo this Subtle and Acid Volatile, together with that Subterranean Flame [which diſſeminates its warm and enlivening Influence,not only through all the greater Veins Branches and Ramifactions of the Earth, but alſo pervades the ſmalleſt Pores of the Denſeſt Matter] did ſeparate, collect and coagulate the more Simple, Pure and Homogeneous parts of Matter; from the Craſſer parts of it.

And as the Maſs of Fluid and wateriſh Matter, receiv'd its degrees of Conſolidation, theſe purer and Pneumatical Coagulations were concreted in thoſe Solid as well as Laxer *Strata* wherein we find them,

And the Magnitude and Figure of theſe concreted Coagulations, correſponds with thoſe Moulds of Craſſer Matter from whence they were Extracted, and wherein they are encloſ'd and compreſs'd. Theſe we find lodg'd either in the

Exterior }
or } Parts of the Earth,
Interior }

Thoſe concreted Coagulations which we meet with in the Outer Coat, or grand Cover of the Earth, are of an irregular Figure; and they are lodg'd in that part in diſorder and confuſion.

And theſe are either the common Pebles, which are of a

Terrene }
Saline }
or } Quality:
Pinguid }

Or,

They are common Flints, *Pyritæ* and

Marchaſites of a Pneumatical and Fiery Quality:

Or,

They are Agates, Onyxes, Jaſpers, Cornelians, &c. Of a Mercurial and Wateriſh Quality, which are more or leſs Tranſparent.

This Outer Coat or Surface of the Earth conſiſting of Sand, Gravel, Clay, Bituminous Peat-Earth, and other kinds of Matter of an Heterogeneous Nature, affords the greateſt variety of theſe Homogeneous Concretions.

And theſe are all of the ſame Nature and Quality with that Courſer and Craſſer Matter from which they were Extracted and Coagulated.

Thoſe more Simple and Homogeneous Concretions which we meet with lodged in the Interior Strata of Solid Matter, which are of an Irregular Figure, are Either of a

Liquifiable or *Calcinable*	Quality.

Thoſe that are not of a Liquifiable Nature, are thoſe which the Miners call the Kernels of Stones.

For as the Spirit of Nature [at the firſt ſetling of Matter] reduc'd all the Conſtituent parts of the Earth to ſeveral Claſſes ; and every Claſs of Matter leading to ſome Mine or Mineral ; ſo every Bed or Layer of Stone or Metal has its proper Kernels, by which the Ingenious Miner may be directed what Mine or Mineral they lead to ; whether to Coal, Rudle, Iron, Stone, Lead or other Metallick Ores ; and theſe coagulated Concretions, are commonly lodg'd in the midle of ſuch ſolid *Strata.*

Thoſe Homogeneous and more Pneumatical Concretions of an irregular Figure, which are of a Liquifiable Quality, are the ſeveral Kinds of Metallick Ores, and theſe are lodg'd in thoſe Rakes, Veins, Riders, and Strings which croſs-cut and divide thoſe Solid *Strata* of a Hot Quality, and the higheſt degree of Concoction.

The Male Parent of all theſe is Sulphur, which being either White or Yellow gives the Tincture or Colour, to all Metals.

The Female Parent is Quick-ſilver, which is the cauſe of their Liquifaction, Flexibility, and Ductility.

All Solid Bodies conſiſt of two ſeveral Natures, Tangible and Pneumatical; the Pneumatical Subſtance, is the Native Spirit of the Body, which diſtinguiſheth the ſeveral Kinds of them: I define therefore all Metallick Ores to be the more Simple Homogeneous Corpuſcles of ſuch Stones and Cills as are of a Hot Quality, and the higheſt degree of Concoction, coagulated and concreted in thoſe Rakes, Veins, *&c.* which croſs-cut and divide thoſe Cills.

The more Homogeneous that Metals are, the leſs of Droſs they have in them: The more of this Native Spirit they have in the Tangible parts, they are the more Liquifiable, Flexible and Ductile; for the cauſe of Liquifaction is the Detention of the Spirits which play within the Body and open it; ſo that the greater plenty of Spirits any Tangible Matter has in it, it's the more Flexible, and therefore when the Tangible parts are Jejune of Spirits, or eaſily Emit them, they are Fragile, and will not eaſily Liquifie.

When the Tangible parts of Matter are Ductile or Tenſile, it's occaſion'd by the Appetite which the Native Spirits have to Union, and Averſneſs to Diſcontinue.

Secondly, That the Metallick Ores are the Homogeneous and Pneumatical Corpuſcles of Stones and Cills of a Hot Quality, and the like, coagulated and concreted by the Plaſtick Spirit of Matter, is evident from the Experience of Mineraliſts, who find the greateſt plenty of Ore, in the Veins of ſuch Cills as are of the higheſt degree of Induration and Concoction; for where the Cills are weak and ſoft, and have not receiv'd a right degree of Heat and Temper, their Veins are only fill'd with Sparr, Soyl, Clay or Vein-ſtone, like unripe Nuts whoſe ſoft and weak Shells are only fill'd with a Milky Pabulum, having little of Kernel in them.

Again, in the Third place, that Ores are the Pneumatical Corpuſcles of Sulphur and Quick-ſilver coagulated and concreted into Clods and Nodes, and lodg'd in the Veins, will be apparent to thoſe who will take the pains to obſerve, that the more Rich any Vein is of Ore, the leſs Spangled with Sulphur, and Quick-ſilver are thoſe Cills and Metals they croſs-cut and divide; and ſo on the contrary, the more ſpangl'd the Stones are, the leſs Ore in the Vein.

And the Reaſon why thoſe Metallick Spangles are collected, coagulated and concreted in thoſe Rakes and Veins, is becauſe they lay moſt open and ready to receive them; and this is the reaſon too, why we meet with float Ore lying in flat Beds in thoſe upper Cills which lye open:

Theſe being Ebullitions or Overflowings of Vein Ore.

As that Hypotheſis of the Theoriſt wherein he conceits, that there was no Metallick Ores or Minerals in the Antediluian Earth, contradicts the Account which *Moſes* gives of *Tubal-Cain*, who was, as he tells us, an Inſtructer of every Artificer in Braſs and Iron: This *Tubal-Cain* living before the Deluge. So Dr. *Woodward*'s Hypotheſis, that the Metallick and Mineral Matter, which is now found in the Perpendicular Intervals of the *Strata*, was all of it Originally, and at the time of the Deluge lodg'd in the Bodies of the *Strata*, being interſpers'd or ſcatter'd in ſingle Corpuſcles in the Sand or other Matter, whereof the *Strata* mainly conſiſted; ſeems inconſiſtent with Reaſon and his own Notions of Specifick Gravity. For,

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Firſt, It cannot be eaſily imagin'd by what Art or Chymiſtry the Metallick or Mineral Matter, which interſpers'd and ſcatter'd in ſingle Corpuſcles in the *Strata* of Solid Stone, [eſpecially the Corpuſcles being ſmaller than thoſe of the ſmalleſt Sand] cou'd be ſeparated and made fit for uſe.

2. Again, if the Maſs of Fluid Matter, after the Deluge was over, did reſettle according to the Rules of Specifick Gravity, the heavieſt ſubſiding the loweſt [as the Dr. aſſerts] why did not theſe ſmall Grains of ponderous Ore ſubſide the loweſt, being heavier than the Corpuſcles of thoſe *Strata* wherein they were lodg'd?

3. And to aſſert that they were born up by the Waters of the Abyſs riſing up towards the Surface [as the Dr. ſuppoſeth] is as inconſiſtent with Gravitation and Levity, as for Feathers to ſink and Lead to ſwim.

Theſe Hypotheſes being inconſiſtent both with Scripture and Reaſon; we ſhall take it for granted, that all theſe coagulated Concretions of Metallick Ores, were by the Plaſtick Spirit in Matter lodg'd in the Veins of the ſeveral *Strata*, lying moſt open, and being moſt ready to receive them: And that the State of the Antediluvian Earth did not differ as to its Conſtituent parts from this Poſtdiluvian Earth.

Having given an Account of the Originals, Natures, and Cauſes of ſuch concreted Coagulations, as are of an Irregular Figure; I proceed to Deſcribe the Natures and Cauſes of thoſe of a more Regular Form.

And theſe are the Kernels or Catheads which we meet with in Coal Metals or Stone Metals, which being either of a Saline or Pinguid Quality, and conſiſting of the ſmalleſt Grit, gave way to the Plaſtick Spirit to Form them into more Regular Shapes and Figures; and theſe are either Globular, Oval, Triangular, Quadrangular, *&c.* as the Matter coagulated had a Natural Tendency to ſuch a Form or Figure; and they lie in theſe Beds of Metals, either in Layers, or in diſorder and confuſion.

Beſides theſe Irregular and Regular Concretions; there are others of a more Uniform Shape and Figure; and theſe may moſt properly bear the name of Form'd Stones.

They are found lodg'd either in Beds of Pinguid and Luxuriant Soil, or in ſuch Beds of Stone, Chalk, Sand, Gravel and Earths as are of a Saline Quality.

Thoſe we meet with lodg'd in Beds of Pinguid and Luxuriant Soil, have the forms and ſhapes of Worms, Serpents, Snails and other Terrene Inſects, which perhaps cou'd never come within the compaſs of our Obſervation.

Thoſe we meet with in the Solid *Strata* of Stones, Chalk, Sand, Gravel and Earth of a Saline Quality, have the Forms of Cockels, Muſſels, Oyſters, and other Marine Inſects, which probably Mankind has never yet been acquainted with; and notwithſtanding that theſe Shells have the Forms of thoſe Marine Inſects they repreſent, yet they never were the ſpoils of Marine Bodies; But form'd in thoſe Stones and Earths, where we find them lodg'd: And it ſeems moſt probable that they receiv'd theſe Forms and Shapes at the Creation of this Material Globe, when Matter was in a Fluid and Wateriſh Maſs; and when there was a commixture of Light and Darkneſs, of the Plaſtick and Vivifick Powers; for then the Vivifick

Fabius Columna, Dr. *Hook*, *Steno*, *Scylla*, *Boccone*, *Ray*, and many others.

fick Spirit of Nature diſſeminated the Specifick Forms of thoſe Animals of the loweſt degree of Life in thoſe wateriſh Funds and Promptuaries of Matter in which they were Form'd, and increas'd into that Shape and Figure we now find them in.

And if God Almighty had not [by dividing the Light from Darkneſs, the Vivifick from the Plaſtick Power, and by Conſolidating the Exterior Strata of Matter] *Curſed the Earth*, theſe Terrene and Marine Inſects which we find petrefi'd and entomb'd in Marble, Limeſtone and Chalk, or bury'd in Beds of Sand, Gravel or Earth, might have increas'd to higher degrees of Perfection, as well as thoſe Subterranean Toads, Frogs, Asks and Clocks, which we meet with in the Cavities and joints of ſuch Stones as have loſt their Natural Feeders.

But of theſe the following Chapters will give a more full Account.

CHAP.

CHAP. II.

Of the Grand Cover of the Earth; the Sympathetical Union of the Plaſtick and Vivifick Spirit; and the Production of Vegetables, the firſt and loweſt Degree of Life.

THE Outer Cover of the more Solid parts of the Earth, which we call the Surface and Fertile Soil, being [as we have obſerv'd] the Univerſal Fund or Promptuary, or the Common Matrix, wherein was deſſeminated the Specifick Forms of the loweſt Degree of Life and Vegetation, whilſt others of a higher Degree Danc'd about it, like Atoms in a Morning Sun's Beam.

It will be neceſſary in the firſt place to give a fuller Deſcription of the Natures and Qualities of it, and to ſhew by what Degrees of Heat and Vital Incubations it was Modified and prepar'd to anſwer that Imperious Word, *Let the Earth bring forth.*

When the Waters were divided and the Sea drawn down to its proper Chan- 1.

Channel, they left behind them a Feculent Mud and Sedement, which being like to a univerſal Quag, of a Lax and Wateriſh Subſtance, conſiſting of the ſeveral Kinds of Matter of an Heterogeneous Nature, and ſaturated with great plenty of Mineral Spirits of all Qualities:

Theſe Mineral Spirits, by a Natural Motion and Tendency riſing up to the Surface, as we obſerve Cream riſeth up to the top of Milk, or as Oyl floateth above Water; the warm Influence of the Ætherial Flame moving upon it, Thickned theſe Mineral Spirits into a Liquid Gelly, or a Pinguid and Unctious Slime.

And this we call the naked Skin of the Earth or Fertile Soil.

This Skin or Fertile Soil, before it got any Coat or Cover upon it, was not only Tinctur'd and Colour'd with all thoſe wateriſh Colours of Green, Red, Yellow, *&c.* but alſo was ſpotted and ſpeckl'd with great variety of other Colours, occaſion'd by a commixture of theſe Mineral Spirits.

And theſe gave not only the Tinctures and Colours to the common and wateriſh Herbs, as Graſs, Plants and

Flowers, but gave alſo the different Complexions to Birds, Beaſts and Men.

And as the ſeveral Colours and Complexions were occaſion'd by the mixture and temperament of the Mineral Spirits, ſo were their different Natures and qualities; for a cunning Chymiſt will Extract out of Herbs and Plants the ſeveral Kinds of Mineral Spirits, as well as out of the Mineral it ſelf.

The Virgin Matter being thus Modifi'd and prepar'd by the warm Influence and Enlivening Vegetations of the Ætherial Flame, and its naked Skin Adorn'd and Beautifi'd with her great variety of Natural Paints: Thoſe Seminal Forms or Plaſtick Souls which were diſſeminated in her warm and moiſt Womb, and Sympathetically united to their belov'd Matter, began to exert their Plaſtick Powers, and put forth ſpungy Strings and Roots; not only to faſten them to the Earth, but to ſuck in ſuch Juices as were moſt proper for their Food and Nouriſhment, which by their Seminal Vertues being digeſted into the Subſtance of a Plant, Herb or Tree, of ſuch an Order, Figure and Temperament, it became

came an Individual of that numerous Species of Vegetables; which began firſt to peep out of the Earth, as Corn out of the Furrows; and afterwards gradually increas'd to the higheſt Degree of Perfection and Maturity its Nature was capable of.

Thus the naked Skin of the Earth was cover'd with a Coat or Green Livery, Beautifi'd and Adorn'd with Flowers of ſeveral kinds of Colours; and as the Paſſive Matter increas'd in Degrees of Heat and Modification, it produc'd Vegetables of higher Degrees of Life and Perfection, as all kinds of Trees, from the loweſt Shrub to the talleſt Cedar or moſt robuſt Oak.

That theſe Productions were not brought forth all at once; but gradually as the Paſſive Matter receiv'd higher Degrees of Heat and Modification, is apparent from our obſerving of thoſe Annual Productions which every Seaſon bringeth forth.

For there are ſome Vegetables of a Cold and Wateriſh Quality, whoſe Natural Spirits are more Fine, Light and Active, which require only a ſmaller Degree of Heat to raiſe them, and theſe are the Productions of thoſe Early

Months; *January*, *February* and *March*: And theſe come to their Perfection and Maturity before *April* and *May*, which preſent us with an other Crop and order of Vegetables: and for this ſame reaſon, *June*, *July* and *Auguſt* go further, and preſents us ſtill with different ſhows of Plants, Herbs and Flowers: And thus as the Sun increaſeth in Heat, and the paſſive Matter in degrees of Modification, we are preſented with higher and more noble Productions.

The Seminal Forms of Vegetables, being now united to their material Vehicles, and being grown up to their ſeveral Degrees of Perfection and Maturity, they retain'd Seed in themſelves, and did Propagate their ſeveral Kinds by ſcattering of their ripe Seed upon the Fertile Soil, which like the warm and moiſt Womb of a fruitful Mother, diſſolves them firſt into a Liquid Jelly, and then divides their parts into their ſeveral uſes.

That the Seminal Forms of Vegetables were Originally diſſeminated in the Earth as in an Univerſal Fund or Promptuary, will be yet further evident by thoſe Ocular Obſervations which has been frequently made of Productions without Seed; for take ſome quantity of Earth digg'd ſeveral Fathoms under Ground, and expoſe it to the Sun and Rain, and it will Spontaneouſly without any Seed bring forth common Graſs and ſeveral Herbs and Plants.

Again, we obſerve that particular Soils will produce, without Propagation by Seed, Herbs and Plants peculiar to that kind of Soil and Earth, as Pavements do Naturally produce Knot-Graſs, *&c.*

If it be object'd, that the ſmaller Seeds are diſſeminated over all by the Winds, and the greater Seeds ſcatter'd by Birds that feed upon them.

I anſwer that its commonly obſerv'd, when Earth is brought out of the *Indies* or other Remote Countries for Ballaſt to Ships, and caſt forth upon ſome Ground in *Italy* or other Countries at a great diſtance, it will put forth Foreign Herbs to us unknown: And it cannot be imagin'd that the Winds ſhou'd blow the Seeds of theſe Plants from the *Indies*, or that the Birds ſhou'd croſs the Seas and ſcatter them at ſo great a diſtance.

To theſe I might farther add thoſe try'd Experiments of Tranſmutation, Tranſmigration, and Degeneration of Herbs and Plants.

Having deſcrib'd the Original of Vegetables the firſt and loweſt Degree of Life, and ſhewn that tho' the manner of their Propagation be now by Seed; yet when Seed is wanting, the Fertile Soil will bring forth common Graſs and other Plants in the Natural way by a Spontaneous Generation: Thus the Evening and the Morning, or the Sympathetical union of the Active Form and Paſſive Matter produc'd the firſt and loweſt Degree of Life, which made the Third Production.

CHAP. III.

Of reducing the Confus'd Maſs of Light or the Ætherial Flame into a Body, which made the Sun; of reducing thoſe higher Fogs and wateriſh Miſts into a Body, which made the Moon; how by clearing of the Superlunary Firmament or the Planetary Spheres, the Stars appear'd: And what the Sun, Moon and Stars contribute towards the Production of Senſitive or Locomotive Animals, and why the Creation of theſe Second Cauſes made the Fourth Production.

THO' the Earth was now Gay and Trim with a new Green Livery of Graſs, Adorn'd with Painted Flowers, and pleaſant Copices or Thickets of Young Trees; the Paſſive Matter was yet too Cold and Wateriſh to draw down out of the Second Degree of Life any of the Senſitive Forms to Actuate and Inform it. The Almighty Power did therefore contract this dilated Ætherial Flame of Light into a Body, which *Moſes* calls the Sun, that thoſe Enlivening Heats and Vital Incubations which flow from it, might be more Strong and Vigorous, and Penetrate deeper into the Cold Matter.

And God plac'd this Cœleſtial Fire at ſuch a convenient diſtance from the Earth, that it might neither be too much ſcorch'd by being too near it; nor frozen, by being at too great a diſtance from it; but that it might receive ſuch a temperate Heat from it, as to excite its Seminal Vertues, and draw up its Juices into them, and thereby Ripen its Natural Fruits.

God gave to the Earth alſo a Diurnal Motion, that by a juſt and regular turning about upon its own Centre, it might have the benefit of Day and Night every Four and twenty Hours, ſo that no part of the Earth might be too much heated by the Sun's preſence upon it, or too long benighted by his abſence from it; becauſe as one ſide is Warm'd and Cheriſh'd by its Rays, it withdraws and turns to it its other ſide; and ſo by this juſt and regular turning about of the Earth, and an equal diſtribution of Day and Night, the active Animals get leave to reſt, the over-heated Air to cool, and the gaſping Earth to recover its fainting Vertues, which a continu'd Day wou'd ſoon Exhauſt and Extinguiſh.

God gave alſo the Sun an Annual Motion, and has directed it into ſuch a commodious Courſe, that it ſheds forth its Enlivening Light, Heat and Influence over all the parts of the Earth, and by turns, gives all Countries their Yearly Seaſons.

And this gradual Increaſe and Decreaſe of Heat, anſwers all the Ends of Nature, both in the Vegetive and Animal World much better than the conſtant Temperature and Equality of Heat, which the Theoriſt ſuppoſeth to have been in the Antediluvian Earth.

After the Creation of the Sun, God reduc'd all thoſe vaſt Fogs and wateriſh Miſts that rang'd about in the Planetary Spheres into a Body, which *Moſes* calls the Moon, and he deſign'd it [as a Reverend and Learn'd Divine of our own has obſerv'd] to be for a Vicarious Light to the Sun, to ſupply his abſence, and perform his Office in the lower World.

He plac'd the Moon in the loweſt of the Cœleſtial Spheres,at ſuch a convenient diſtance from the Earth, that the warm Influence of the Sun being reflected from it, might carry down with it ſome of its Cœleſtial Moiſture. He gave alſo to the Moon ſo commodious a Motion, which it performs in every 28 or 29 Days, that when the Sun is Southward it moves Northward, and when the Sun moves Northward it's Motion is Southward,by which Motion the Cold and Darkneſs of the long Winter Nights are moderated, and theſe remote Regions under the Poles comforted with the Sun's Influence at Second-hand, when they want it at the Firſt.

Thus by reducing of thoſe wateriſh Fogs into the Body of the Moon, the upper Firmament or the Planetary Spheres were clear'd, and the Planets, with the reſt of the Stars Created in the Morning of the World, began to appear; and to ſend down their Ætherial and Inviſible Influences upon this Globe, which were obſtructed and interrupted by the Interpoſition of theſe wateriſh Miſts.

And the Creation of the Sun and Moon and the Clearing of the Planetary Spheres God made uſe of as inſtrumental, or neceſſary Second Cauſes toward the Production of the Second Degree of Life, and therefore theſe made the Fourth Production.

CHAP. IV.

Of the Production of the Second Degree of Life, and first of Oviparous Animals, as Fiſh and wateriſh Inſects.

HAving already obſerv'd, that whilſt the Earth was a Fluid and Wateriſh Maſs, and there was a commixture of Light and Darkneſs, the Plaſtick and Vivifick Spirits; the Specifick Forms of Vegetation, and the loweſt Forms of Animals were diſſeminated in the Exterior *Strata* of this wateriſh Maſs; and if God had not Curs'd the Earth, by dividing Light from Darkneſs, the Material and Formal Principles of Life, the Luxuriant

Matter wou'd have teem'd forth ſuch numbers of Animal Productions, that the Surface of the Earth and Waters wou'd not have maintain'd them.

This Hypotheſis is grounded not only upon the form'd Stones we meet with lodg'd in the Interior *Strata* of the Earth [which having the ſhapes and repreſentations of Terrene and Marine Inſects] cou'd proceed from no other Original than a Plaſtick Spirit ; but alſo upon thoſe Subterranean Animals, as Toads, Frogs, Asks and Clocks, which we ſometimes meet with inclos'd in the Cavities and Hollows of Stone, as well as in their dry Joints. I have found a large Toad ſix Yards under Ground, inclos'd in the very middle of a hard Stone, where the Joint that led to it was ſo ſtraight, that it wou'd not receive the thinneſt Knife ; ſo likewiſe great numbers of Asks, Clocks and Beetles in the dry Joints of Stones, which cou'd have no other generation, but what was from a Plaſtick Spirit modifying a Subterranean Vapour collected into that Cavity or dry Joint, the Vivifick Flame kindl'd a Spark of Life in them, which [by ſucking in ſuch Subterranean Vapours, as abounded in the Joints of theſe dry

Stones, which had loſt their Natural Feeders] were increas'd to that bulk we found them in; no doubt but the *Stamina Vitæ* of theſe Subterrene Animals are preſerv'd by continual Sleeping, and the Air they breath is purely Subterranean, like Embrios in the Womb, which live by the Reſpiration of their Mothers: And it may ſeem very probable that theſe under-ground Animals have liv'd in theſe Joints and Cavities ever ſince the Deluge, and perhaps long before; for as nothing preſerves the Vital Flame more than Sleep; ſo nothing waſtes and ſpends it more than Action.

To theſe I might add the Production of Eels, Worms, Marine and Wateriſh Inſects, as the *Urtica Marina*, *&c.* which being *Zoophyta* or Plant Animals, and not Locomotive, cou'd have no other Production, than what was meerly Æquivocal or *Spontaneous*, and from Matter modifi'd and prepar'd for receiving of the Vital Spark.

Beſides theſe Inviſible Productions, I ſhall add one more, viſible and apparent.

Take a ſtrong Horſe-hair, and put it into the Water warm'd by the Influence of the Sun [eſpecially in *May* or *June*] and within ſome few Hours it will take Life, move at both Ends, and in a ſhort time, its probable that it might become one of thoſe ſeveral kinds of Eels we meet with in the Waters.

Notwithſtanding that all theſe Productions had their firſt Original from ſuch Matter as was moſt proper and capable to be modified by the Plaſtick Spirit of Nature; yet being produc'd, they ſometimes propagate their ſeveral Kinds by univocal Generation, theſe Marine Inſects which are not Locomotive, being only excepted.

From theſe Præliminary Inſtances, and a great many more Ocular Obſervations which might eaſily be produc'd, I conclude, that as the ſeveral Forms of Vegetables, were diſſeminated in the upper Covers of the Earth; ſo were the Specifick Forms of ſeveral kinds of Fiſh [as well thoſe which the Naturaliſts call *Pelagiæ*, as thoſe they call *Liturales*] deſſeminated in the Waters, or Submarine and freſh-water Quickſands; and as the Water receiv'd higher Degrees of Modification, they produc'd Fiſh of a higher Degree of Life, in obedience to that Command laid upon them, *Let the Waters bring forth abundantly.*

The Second Cauſes which concurr'd in the Production of theſe Wateriſh Animals, were,

Firſt, the Cœleſtial Influences.

Secondly, The Water which being Modified by the Plaſtick Spirit and the Cœleſtial Influences, became wateriſh Vehicles, or Bodies for their Specifick Forms to act in.

Thirdly, The Submarine and Wateriſh Quick-ſands in which their Eggs were Generated.

Fourthly, The Subterranean Heat, which abounding moſt in theſe Submarine Quick-ſands or wateriſh Neſts, did Hatch theſe Eggs into Life.

Fifthly, An Innate Power in the Plaſtick Form, which diſcriminated their Kinds.

The Original Production of all kinds of Fiſh, being from their Inviſibe and Vital Forms diſſeminated in Wateriſh Quick-ſands, as ſoon as they came to Perfection and Maturity, they retain'd Seed in themſelves, by which they Propagated their own Kinds. The time of their Propagation is with us about *September*; for then being grown ſtrong and luſty with their Summers Feeding, and the Influence of the Moon and the reſt of the Ætherial Bodies, being then more ſtrong and powerful upon the Waters. Again, about that time the Subterranean Heat riſes towards the Surface of the Earth, and breaks out in Springs and Quick ſands, which is the reaſon, why about that time the Freſh-water Fiſh draw up to the Spring-heads, and the Sea Fiſh to the Submarine Quick-ſands, wherein they ſcatter their Eggs.

The manner how they Propagate, is, firſt by Digging up the Sand where they intend to make their Neſts, and then [not by Copulation or Penetration of parts,but playing Cheek for Chole, and by Sympathetical Touches] the Female whones her Eggs, and the Male his Spawn, which mixing together falls down into theſe prepar'd Neſts which they cover up with Sand, thereby ſecuring it from the Winter Floods.

After this they return to their Winter Holds, leaving their Eggs to be Hatch'd by the Subterranean Heat, which continues in the Springs and Quick-ſands until the *April* following; and then the Young Frie,being Hatch'd creep out of their warm Neſts and Swim down the Waters in numerous Swarms or Shoals.

After the Production of all the Subordinate Kinds of Fiſh, God laſt of all Created great Whales, by which words *Moſes* intimates to us, that all the reſt of the wateriſh Animals were produc'd by the ordinary Concurrence of Second Cauſes; but God to ſhew his Great Power in the Deep Waters as well as upon the Dry Land, did ſeem to give a Preternatural Aſſiſtance to the Production of an Animal of ſo great a Body; which in the Atlantick Ocean, when they appear to Mariners upon the Waters, appear like little Iſlands or Mountains; and theſe are the Leviathans that God made to take their Paſtime in the Deep: He made them Lords alſo over all the Fiſh, which He gave to them for Meat.

For as every Superior Rank or Species of Terrene Animals Feed upon their Inferior, and Man upon all; ſo every Superior Species of Fiſh live upon their Inferior, and ſo the Whale, being Lord over all the reſt, lives upon its Underlings.

CHAP.

CHAP. V.

Of the Second Genus of Oviparous Animals, (viz.) *the Aerial: And First, of Fly Inſects, Secondly, of Serpents, Thirdly, of Birds; and why* Moſes *makes the Wateriſh and Aerial Animals Congenial.*

AS it ſeems prepoſterous to Create any Species of Animals, before Meat ſuitable to their Natures to Live upon was provided for them; ſo it ſeems moſt probable and agreeable with the Ends of Nature, that Graſs, Plants, Herbs, and the whole Set of Vegetables ſhou'd be the firſt Spring and Summers Product. That the Repleniſhing of the Waters with all Kinds of Fiſh, the Production of the following Winter; and that the next Spring ſhou'd begin with the Production of Aerial Animals; theſe Living and Feeding upon the firſt Products of the Earth and Waters.

Again, ſince the ſeveral Degrees of Modification of Matter, and the Animal Life increaſeth, as the Enlivening Influence of the Sun grows Hotter and more Powerful; it neceſſarily follows, that the ſeveral Kinds of Flying Inſects, [being the loweſt Degree of Life under this Genus] ſhou'd be the firſt Product; for as ſoon as the Fertile Soil had receiv'd a degree of Heat from the approaching Sun, the Earth began to revive, the Young Plants began to peep out of their Winter Beds, and the tender Leaves of Trees began to break their Autumn Buds.

The Eaſt Wind blowing then Dry, by it's ſoft and eaſie Blaſts did Condenſe the Morning and Evening Dews into viſcous and clammy Strings, which like Cobwebs hang upon every Thorn and ſpread themſelves upon the Young Graſs, till the Sun advancing towards the Meridian, ſent down a warm Reflection upon the Earth, and caus'd all theſe fine and tender Threads to draw together, and faſhion themſelves into little Neſts, in which by a higher Degree of Heat were form'd little Eggs; which by another Degree of Heat took Life, and did Fly about in the open

Air, ſome Feeding upon Dews, others upon Leaves; others upon Corruption in the Air; others were Blood-ſuckers.

Beſides theſe Generated of Dews, there are Infinite numbers of other Kinds of Inſects which are Generated of Slime and Corruption; and theſe are either Daily or Weekly Productions, ſome of which Tranſmute from one Species to another, as thoſe Inſects which we call Caterpillars the firſt Summer, the next Summer will become Butterflies: So Cod-bates in *April* and *June* will Tranſmute into thoſe kind of Flies we call Clegs, which are Blood-ſuckers.

To ſhew particularly the Kinds, Natures and Numbers of all theſe Tranſmutable Inſects, wou'd be a Task Invincible. Thus were the ſeveral Kinds of Flying Inſects produc'd, having their Colours, Natures and Qualities from Flowers, Plants, Herbs, Trees, or corrupted Water and Slime, and their Shapes and Figures from their Plaſtick Forms, theſe being the loweſt Degree of Life, a ſmall Degree of Heat produc'd 'em.

Of the Production of Serpents.

AFter the Production of theſe Flying Inſects, the *Eaſt* Wind ſtill blowing Warm and Dry, thoſe ſtanding Puddles of Stagnated and Corrupted Water being drain'd, and leaving behind a Poiſonous Slime, on which by the Sun's Influence were form'd poiſonous Eggs; which by higher Degrees of Heat were Hatch'd into Life, and by ſucking in and feeding upon ſuch Poiſonous Matter as they cou'd meet with ſuitable to their Natures, they got ſtrength, Feet and Wings, and became Serpents of ſeveral Kinds, ſome Creepers, as Adders and Snakes, ſome with Feet, as the Aſp and Viper, ſome with Horns, as the Ceraſles; ſome with Wings, as the Baſilisk and Dragon, and the like.

Altho that theſe have all of them Head, Heart, Blood, Nerves, Senſes and other parts agreeable with the moſt perfect Animals; and tho' that ſome of them be the moſt Subtile amongſt the Irrationals; yet by reaſon of their diſparity with Quadrupedes, they are accounted amongſt the imperfect Animals and of a lower Degree of Life.

Of the ſeveral Kinds of Birds.

AFter this the Cold and Wateriſh Earth, being drain'd and warm'd by the increaſing Influence of the Sun, the Mountains, Heaths, Dales, Valleys, Water-ſands and the Sea-ſhore, were Cover'd with a Luxuriant, Plaſtick and Prolifick Slime, which drew down [by way of Sympathy] out of the warm Regions of the Air, the Specifick Forms of Birds or Aerial Animals, which being united to this Luxuriant and Plaſtick Slime, there were Form'd innumerable numbers of Eggs upon the Mountains, Heaths, Valleys, and all parts of the Earths Surface; and no ſooner were theſe Eggs Form'd, but the warm Influence of the Sun, ſat on Brood upon them until they were Hatch'd into little Chickens.

Thoſe Hatch'd upon the Sea-ſhore became Sea-Birds, thoſe by the ſides of Rivers, feeding upon Freſh-water Fiſh, and thoſe Hatch'd hy the ſides of Lakes and Ponds, became Amphibious Birds, feeding both upon Fiſh and Herbs, as Geeſe, Swans, Ducks, *&c.* Thoſe Hatch'd upon Mountains and Heaths feeding upon Mountain Vegetables, Heath Birds; thoſe upon the Plains and Valleys became Domeſticks, feeding both upon Graſs and Corn; and thoſe in the Woods, Singing Birds and Birds of Prey, as the Eagle, and the reſt of thoſe Tyrants of the Air.

After this manner were the Aerial Animals produc'd, and the reaſon why *Moſes* makes the Aerial and Wateriſh Animals Congenial, is,

Firſt, The parity of their Production, being both from Eggs.

Secondly, The Affinity of that Matter on which they were produc'd, the Air and Water being Tranſmutable Elements.

Thirdly, From the likeneſs of their Actions and Qualities, the one Kind having Fins by which they Swim in the Water, the other having Wings by which they Fly or Swim in the Air.

As theſe were the Productions of the firſt Spring Months (*viz.*) *January*, *February* and *March*; ſo in theſe Months they do always Propagate their Kinds by laying of Eggs, every Species according to its Kind; ſome on Mountains, others in Valleys; ſome by Water-ſides, others in the Woods, *&c.* the warm Wing of the Dam, now ſupplying the Want of a warm Sun-beam.

For as the Wing Hatcheth them out of their Shells, ſo it ſtrengthens and nouriſhes them by Vital Incubations, till their Pinions be able to bear them up to ſeek their own Food: Thus the Wing is both the Midwiſe that brings them out, and the Nurſe that brings them up.

CHAP. VI.

Of the Terrene, or Viviparous Animals.

After the Production of theſe Animals of a lower Degree of Life, and Perfection, and the Sun was advanc'd higher in his Annual Motion, which Darting down his warm Beams upon the Earth in a more direct Line, they did penetrate deeper into the Cold Matter; and by drawing forth its Fertile Spirits towards the Skin or Surface of it, they ſet the Plaſtick power on working, and modifying the Paſſive Matter into more noble Forms; which by their Sympathetical Charms drew down the Specifick Forms of the moſt perfect Animals within the Second Sphere of Life.

For in every little Pit or Hollow of the Earth, which being fill'd with Luxuriant and Prolifick Slime was kindl'd by the Vivifick Vertue of the Seminal Form, a little bubble of Life, which the Plaſtick power began to ſhape into the Form or Figure of an Animal.

And thus was the numerous Brood of Quadrupedes, [being Animals of the moſt perfect Kind] firſt Conceiv'd in the warm and moiſt womb of Modified Matter, nouriſh'd by ſucking in the Luxuriant and Prolifick Slime; which by their Vital Heat they digeſted and diſtributed into the ſeveral Parts and Members of their Bodies increaſing of them by an equal aſſimulation of Parts; and as ſoon as theſe young Embrio's had got ſtrength, they Crawl'd out of their warm Neſts of Matter, and began to ſuck in thoſe Honey Dews, and lick up that ſweet Manna which laid upon the Graſs and Herbs, and this ſupply'd to them the want of Maternal Milk and Nouriſhment.

For during the time of theſe Productions, God neither ſuffer'd it to Rain upon the Earth, nor the Winds to blow, leſt this Infant Brood of Young Animals ſhou'd have been deſtroy'd, before the Birds got Wing, or the Beaſts Foot and ſtrength to defend themſelves againſt a Storm; but there went up only a Miſt from the Earth, which water'd the whole Face of the Ground. Gen. 2. 6. And this Miſt was only a warm and moiſt Smother, which aroſe from the Earth, as we obſerve it to riſe from the Furrows in the Spring Months occaſion'd by the Morning Sun-Beams; and theſe Clouds which did Swim in the Air, only ſerv'd for Umbrello's and Paraſoli to ſcreen thoſe Infant Animals from being ſcorch'd by the Heat of the Sun, and from drying up their Food and Nouriſhment.

The Earth being now Stock'd with the ſeveral Kinds of Animals, contain'd under the Senſitive Genus, they did Propagate their Kinds by Univocal Generation. For which end Nature and Providence hath form'd ſeveral

Veſſels or Slime-Pits in every Female, for preſerving ſomething Analogous to that Original Slime, which was then the Paſſive Principle of Generation, and likewiſe in every Male ſuch Veſſels as are moſt fit and commodious for preſerving a Beam or Spark of the Ætherial Flame [which being the material Vehicle, wherein the Specifick Form is preſerv'd] kindles the firſt buble of Life in the Paſſive Matter.

And we obſerve that as ſoon as Age and Maturity hath fill'd theſe Seminal Veſſels with this Prolifick Slime, and digeſt'd it into a right Degree of Heat and Temperature, the Females of every Kind or Species of Animals, begin to Prune, Dreſs and Trim themſelves, by which modeſt way of Courtſhip, the Male is drawn and Charm'd to within their Sympathetical Spheres: Thus the Evening and the Morning, or the Sympathetical Union of the Active Form and Paſſive Matter, made the Fifth Production.

CHAP. VII.

Of the Creation of Man, the Sixth Production.

THE Earth being now cover'd with the great variety of Species, contain'd under the Genus of Vegetation, the Waters repleniſh'd with all Kinds of Fiſh, the Mountains, Plains and Valleys Stock'd with Herds and Flocks of all Kinds of Cattle: God did once more Modifie the Paſſive Matter into a more noble and excellent Form, not only capacitated to receive the lower Degrees of the Animal Life; but alſo fitted with Organs to entertain an Intellectual Soul, which *Moſes* tells us God Breath'd into it: It being impoſſible for Matter, tho' never ſo curiouſly Modifi'd by the Plaſtick Spirit of Nature and the joint Concurrence of the Cœleſtial Influences to draw down by the power of any Material Sympathy a Soul out of the Immaterial and Intellectual Spheres of Life to Animate and Enform it.

And this Noble Creature God call'd *Man*, being made not only after his own Image, Spiritual and Immortal; but alſo after his Similitude (*viz*) Endow'd with all the Affections and Communicable Attributes of the Divine Nature, by which he became capable not only of diſcloſing the Secret Myſteries of Nature, and of diving into its Deep Philoſophy; but alſo of Knowing and Adoring his Creator; by which Perogatives of his Birth, and Noble Extraction, he became Qualifi'd for being his Creator's Vicegerent upon Earth.

THE

The Concluſion.

Wherein is ſhewn the meaning and ſignificancy of theſe Words. And God ſaw every thing that he had made, and behold it was very good.

THat God, who is Infinite in Goodneſs and all Perfections, cannot be the Author or Producer of any thing, but what is Good and Perfect in its Kind, hath been always aſſum'd as a granted Principle, not only by the beſt of Divines, but even the generality of *Pagan* Philoſophers: Yet *Moſes*, notwithſtanding this, foreſeeing that this excellent Frame of the World, which was deſign'd on purpoſe to bring all reaſonable Creatures to the Knowledge and Veneration of their Creator, wou'd be perverted to contrary Ends and Effects; and that the Production of all the Creatures might be aſcrib'd wholly to Second Cauſes, or to no Cauſe at all; but to

Chance and to the caſual Motion of Matter, for the prevention of which, he here brings in the Almighty *more Humano* taking an exact View and Survey of the whole Creation, both as to its Structure and Furniture, and giving it his Divine Approbation in theſe words, *and he ſaw every thing that he had made, and behold it was very good.*

The Goodneſs of the Creatures do Principally conſiſt in theſe Four Particulars.

1. In their Correſpondency and Agreement with thoſe Patterns and Ideas preconceiv'd in the Divine Underſtanding.

2. In their Fitneſs and Suitableneſs for thoſe miſplaid Ends and Purpoſes for which they were Created.

3. In their being Good and Perfect in their ſeveral Kinds.

4. In the Regular keeping and obſerving thoſe Rules given them at their Creation.

Firſt. That this Infinite variety of Orders, Shapes and Figures, by which the ſeveral Species of Creatures are Characteriz'd and Diſtinguiſh'd, are not the Effects of blind Chance or Caſual Motion, but the Products of Infinite Power, er, Wiſdom and Counſel, will be clear and evident, if we carefully obſerve, that not only their Numbers, Shapes and Figures; but alſo their whole Contextures and Contemperation of parts, with their Natures and Qualities, have all of them a manifeſt relation to thoſe ſeveral Uſes and Operations they perform; and this is ſo fairly Illuſtrated and Prov'd by the Ingenious and Leaned Mr. *Ray*, in his Treatiſe concerning the Wiſdom and Providence of God in the Creation of the World; that a further enlargement upon this Argument, wou'd be wholly ſuperfluous.

Secondly That all Creatures are Good and Perfect in their Kind, will appear, if we conſider that it was moſt agreeable with the Divine Wiſdom, that the whole Scheme and Syſtem of Nature, ſhou'd conſiſt in different Degrees of Perfection and Subordination of Life: And that every Inferior Species ſhou'd be Concatenated to its Superior by Animals of an Intermediate Nature,

And yet notwithſtanding this difference amongſt the Creatures in Degrees of Life and Perfection, we cannot but obſerve, that every Creature even of the loweſt Degree of Life is Good and

Perfect in its Kind (*viz*) without any blemiſh, defect or flaw; for the meaneſt Inſect, is as perfect an Animal, as the Elephant and Whale, and God's Wiſdom and Power is as well to be Admir'd in the Paint upon the Butterflie's Wing, as in the Glorious Body of the Sun.

Again, there is nothing more agreeable with the Divine Wiſdom, than that there ſhou'd be in ſo great a variety of Creatures, Degrees of Subordination and Perfection, will yet further appear if we conſider,

Firſt. That theſe Creatures of a lower Degree of Perfection do by compariſon Illuſtrate and commend thoſe of a higher Degree.

Secondly. That thoſe Regular Subſerviencies and Harmonies might make up a Vital Cement whereby the whole Frame and Structure ſhou'd be United.

Thirdly. It was neceſſary that there ſhou'd be variety of Natures, and different Degrees of Life, that the Wiſdom of the Creator might be the more Diſplay'd, Acknowledg'd and Celebrated, and that his Infinite and Univerſal Goodneſs might be more Viſible in the ſupplying and providing for the Wants of ſo vaſt a number of Creatures of ſo different Natures.

Laſtly, That Man being plac'd at ſo great a diſtance from the Beatifick Viſion [which whilſt he continues in this Compounded State, wou'd either have Dazl'd or Confounded his Sight, or Affright'd and Raviſh'd his Soul out of his Body] it pleas'd therefore the Divine Wiſdom to Create all this great variety of Creatures that he might behold his Creator at Second-hand, when his Bodily Eyes cou'd not bear the ſight of Him at the firſt.

Secondly

And *Secondly*, That he might exerciſe and improve his Rational Faculties, and entertain his Heaven-born Soul with Natural as well as Divine Speculations, which in ſome meaſure Compenſates for the want of a clearer ſight of the Divine Viſion.

Again, altho' it muſt be granted that in thoſe different Degrees of Perfection all are not alike Amiable, Lovely and Beneficial to Man; yet thoſe that are the leſs Beautiful and Lovely ſets off the Beauty of the reſt, as Shadows ſet off the more lively Colours.

Thirdly.

Thirdly, That the goodneſs of the Creature, does conſiſt in its fitneſs for thoſe Ends and Purpoſes for which it was Created will appear, if we conſider that it cannot be eaſily imagin'd, that God who is Infinite in Wiſdom and Goodneſs, ſhou'd Create any thing in Vain; but to good Ends, and the beſt of Purpoſes.

We therefore in the Nature of Things can diſcover Infinite agreeableneſs of this to that, and of one thing to another. And though we cannot throughly penetrate and diſcover the Relation Uſe and End, of every Thing in Nature, by reaſon of our Incapacity, occaſion'd by the Darkneſs of that State we live in; yet we have reaſon from what we can diſcover, to conclude, That every thing was Created for good Ends and particular Uſes:

For, firſt of all, we do obſerve that every Inferior Creature was ſubſervient to its Superior: And all the Creatures ſubſervient to Man; altho our Ignorance in this Dark and Degenerate State, has made us uncapable of Underſtanding their Natures and Uſes.

Secondly *Secondly*, We obſerve that every Element is fitt'd for its Animal, and every Animal for its proper Element.

We obſerve that every Object is fitted for its Senſe, and every Senſe to its proper Object. *Thirdly.*

We obſerve that Food and Nouriſhment is provided in Nature's Storehouſe for every Animal, and every Animal for its proper Food and Nouriſhment. *Fourthly*

Theſe being trite and common Topicks, I refer the Reader to thoſe Authors who have made it their Buſineſs to enlarge upon them: I ſhall proceed therefore to ſhew how in the laſt place, the goodneſs of the Creatures conſiſt in obſerving and keeping of thoſe Laws given them at their Creation.

When the Almighty had Created the World, and Stock'd it with ſeveral Ranks and Degrees of Creatures, He gave them Laws to keep, and Rules to walk by: And theſe we call the regular Courſe of Nature, from which they never vary unleſs at their Creator's Command. *Fourthly*

Theſe Laws which all the Creatures are govern'd by, are,

1. *A Divine Impreſſion*; Or,
2. *Natural Inſtinct*,
3. *External Senſes.*
4. *The Laws and Rules of Natural Reaſon.*

The Laws of Divine Impreſſion.

1. The Inanimate Creatures, are govern'd by a Divine Impreſſion; for if we look up to Heaven, we obſerve how the Sun, Moon and all the Ætherial Globes do perform their Natural Motions, from which they have not vary'd higher or lower, faſter or ſlower, ſince their firſt Creation; and how they ſhed forth their Cœleſtial Influences on all things here below.

2. If we look downward, we may obſerve, how this Terraqueous Globe conſiſting of dull and ſtupid Matter, turnes about its own Centre, and Naturally, Conſtantly and Regularly performs its Diurnal Motion, its cold ſides thereby receiving the warm Influence of the Cœleſtial Bodies.

3. We may obſerve, that thoſe weak and groveling Plants (*viz.*) the Hop, Vine and Ivy, are by Nature furniſh'd with Tendrils or pliant Strings, and how by a Natural kind of Inſtinct they ſeek about for Supporters, and having found them, they Claſp about them; for all the Plants of this Kind, as if they were ſenſibe of their being Adjective, are always in buſie queſt for their Subſtantive.

4. We

Fourthly, We may obſerve how the Inſects, thoſe Animals of the loweſt Degree of Life, propagate and preſerve their Kind by Natural Inſtinct, which in them ſupplies the want of higher Degrees of Senſe; for with what curioſity do the Bees make their waxen Cells, lay in their Winter Proviſion, and how obedient they are to their Maſter Bees or Governors? With what wonderful Art does the Spider Spin his Web out of his own Bowels? With what care and induſtry does the little Ant firſt make her Store-houſe in ſome dry Hill, then ſeeks about for Winter proviſions, and that the Corn and Seed ſhe gathers may not grow nor ſprout in her Store-houſe, ſhe Eats off that end where the Seminal Form is lodg'd. 4.

The Laws of natural Inſtinct.

Fifthly, We may obſerve how all thoſe Winter Sleepers, who when their Summers Proviſions are ſpent, and by their Natural Inſtinct they foreſee the Winter's Froſt approaching, do withdraw into ſome warm Winter-quarters, where they Live by Sleeping, till the approaching Sun invite them out into the Fields. 5.

Sixthly, we may obſerve with what wonderful Art and Curioſity the ſmalleſt Birds build their Neſts of ſeveral 6.

forms

forms ſuitable to their Weakneſs or Strength; how when their Neſts are Built, they lay their Eggs, Hatch them with their Wings, and then Feed them till they get ſtrength to Fly abroad, and ſeek their own Meat; we may further obſerve, that all thoſe Creatures that are govern'd by the Laws of Natural Inſtinct, never varies in their Operations; but walk in the ſame Roads and purſue the ſame Methods.

7. *Seventhly*, We may obſerve how thoſe Animals that are Govern'd both by Senſe and Inſtinct do Propagate their Kinds, and how they are all provided with Natural Armour for ſelf-preſervation: We may alſo obſerve amongſt thoſe Animals of a higher Degree of Senſe ſuch inſtances of Love and Hatred, as are ſeldom practis'd by the moſt Paſſionate Lovers, or the moſt Malicious Haters.

The Laws of external Senſe.

I have known and heard of Dogs and other Creatures, that have pin'd away and Dy'd for want of their Maſters: And others alſo that have born ſuch an implacable Antipathy againſt ſome particular Perſons, as was never to be reconcil'd.

Eighthly, and Laſtly, I might inſtance in thoſe excellent Laws of Prudence and Reaſon, as well as thoſe of the Divine Life, which God imprinted upon the Nature of Man, before they were obliterat'd and defac'd by Senſe. 8.

Thus all the Creatures, Man only excepted, continue ſtill under the government of thoſe Laws given them at their firſt Creation.

This may ſeem ſufficient to Convince the moſt profeſs'd Atheiſt, who is not reſolv'd to offer violence to his Natural Senſe as well as Reaſon, That there is a God, and that the World with all its Furniture, was the Product of the Divine Power, Wiſdom and Counſel.

The End of the Second Part.

A

DISCOURSE

Concerning the

Terreſtrial Paradiſe,

Shewing how

ADAM was Introduced into it: The time he continued in it; and how He and *EVE* Employed that Time.

A
DISCOURSE
Concerning the
Terreſtrial Paradiſe,
Shewing how
ADAM
Was Introduced into it.

SEveral Men of great Learning, as well Ancient as Modern, have made moſt Induſtrious Enquiries, after the place and ſituation of this Terreſtrial Paradiſe; of which *Moſes* has given us ſo particular a Deſcription in his Second Chapter of *Geneſis*.

And their Opinions about it, being as different and wide, as *Eaſt* and *Weſt*, Heaven and Earth: We ſhall therefore

only

only undertake, to preſent the Reader with ſome Concluſions, drawn, as well from the faireſt Arguments of probability, as from the *Moſaick* Account of the place,

1. And firſt we Conclude from the Literal Senſe of the Text, that there was ſuch a place upon Earth, as a Local Paradiſe; and that this place, did as far exceed the reſt of the Earth, in Fertility of Soil, and all the Products of Nature, as Gardens of the beſt Cultivation, exceed the common Fields.

2. We Collect from the Literal Senſe, that this Terreſtrial Paradiſe, in reſpect of *Judea* or *Midian* [where we ſuppoſe *Moſes* Writ this Syſtem of the Creation] was *Eaſtward*.

3 That in reſpect of the Surface of the Earth, its particular Situation was miſplaced in a Middle between the Tops of the higheſt Mountains, and the lower Plains and Valleys.

4. That in reſpect of the Heavens, its Situation was under the Æquinoctial Line.

Theſe two laſt Hypotheſis's having no authority from the Sacred Scripture, we ſhall endeavour to ground them; not only upon the bare Account which

Travellus has given of the Fertility of thoſe Æquinoctial Regions, but alſo upon ſuch Natural Arguments as cannot [without offering violence to Reaſon it ſelf] be eaſily deny'd.

For notwithſtanding, that ſeveral of the Ancient Writers, were of Opinion that thoſe Countries, under the Torrid Zone, were Uninhabitable, by reaſon of the Sun's darting down its fiery *Globuli* upon them in down-right Lines: And becauſe they wanted thoſe plentiful and pleaſant Showers of Rain, which Fertiliz'd the reſt of the Habitable World; yet the Experience of later Travellers hath diſcover'd to us, firſt that the want of Rain is repair'd by thoſe 1. great and rich Dews, which the Morning-cold Condenſeth, and which lying upon the Ground until Ten a Clock, the Sun's Influence upon it, having then exhal'd the more Nitrous and Airy part of it; the Sphere of Rarefaction [which in thoſe Regions falls low, and is always open] Rarifies it into ſuch cool Gales, and Briezes of Wind [which always Blowing from Ten a Clock in the Morning until Three in the Afternoon] ſo cools and abates the extremity of the Heat; that no Inconvenience or Diſtempreture is found there.

2. Again, the Nights [as Sir *Walter Raleigh* has Obſerv'd in his Travels] are ſo Cool, Freſh and Equal, by reaſon of the intire Interpoſition of the Earth, that there is not to be found in any part of the Habitable World a better, more wholſome, or equal Temper of Air.

And although there be ſome Tracts, which lye under the Perpendicular Mountains where the Air Stagnates, the freſh Gales and Briezes of Wind over-blowing them, and ſome other places Sandy, Barren and leſs Inhabited, yet the greateſt part of thoſe Regions [eſpecially the Dales, which lying above the Plains and lower Valleys, have always their Air Bruſh'd and Sweetn'd with theſe freſh Briezes of Wind; and are plentifully water'd, with Rapid Rivolets ariſing from the Tops and Sides of their Neighbouring Mountains.

And theſe as well as the Plains and Valleys, are Beautify'd with abundance of ſtately Cedars, and other Trees, caſting a pleaſant Shade, and delightful Fragrancy.

They are enrich'd too with all ſorts of moſt delicate Fruit-trees, always Green, and bearing the choiſeſt Fruit in their higheſt Degree of Perfection. Their Boughs and Branches are never uncloath'd and left naked; for their Sap never creeps under Ground fearing the Winter Froſts.

3. To theſe Accounts which we have from Travellers of the greateſt Truth and Fidelity; we further add, That as all the flat Strata or Layers of Stones, Metals, and Subterranean Earths, have a Natural Riſe toward this middle Girdle of the Earth, and a gradual Declivity towards the two Poles (which all Mineraliſts, who underſtand the Structure of the Earth, and the poſition of the ſolid Strata willingly agree to) we may thence moſt reaſonably Collect, that theſe Æquinoctial Regions were the firſt dry Land that appear'd after the Waters began to divide and decreaſe.

4. We yet further ſubjoin, that as this middle Girdle upon the Earth, lies parallel to that middle Circle in the Heavens [we call the Sodiack] through which the Sun performs its Annual Courſe, we Collect that it, with the

adjoining Regions, received the firſt and largeſt Influence of the Sun's Enlivening Vegetation, and conſequently were Stored with the firſt Products of Nature; as well Animals, as Vegetables. So that in all probability, there might be Ripe Fruit in Paradiſe, before thoſe other Regions towards the Tropicks and Poles were drain'd from the Waters, or receiv'd the Sun's Vegetation according to their Natural Seaſons.

5. Again, as theſe Æquinoctial Regions produced all Kinds of Vegetables and Animals in the higheſt Degree of Perfection their Natures were Capable of: So they did, and do to this Day afford us not only the greateſt plenty of the moſt Precious Stones, but alſo the moſt Valuable and Uſeful Metals, as Gold, Silver, Braſs, Iron, *&c.* and this is not only evident from the *Moſaick* Account of the Rivers of Paradiſe; but the Experience of thoſe Merchants, who being tempted by their Value, Trade thither.

6. Once more, as it is moſt probable, that theſe Æquinoctial Regions were the firſt dry Land, that they receiv'd the firſt Enlivening Vegetation of the Sun, and were honour'd

with the firſt products of Nature; ſo it is moſt agreeable with Reaſon, that all the Regions upon Earth are more or leſs Paradiſaical, as their Situations are nearer or at a diſtance from this middle Zone, and that from Paradiſe they were firſt Stock'd with the ſeveral Products of Nature, and the ſeveral Genera of Animals; which began to Propagate their Kinds there, until the Earth was Repleniſh'd. Altho' its moſt probable, that they did degenerate from their Original Perfection as their Propagations were at a diſtance from Paradiſe.

7. As from theſe Arguments we Collect and Conclude, that the Terreſtrial Paradiſe was in reſpect of the Heavens Situated under the Æquinoctial Line; ſo in the laſt place, we Conclude that its particular Situation was in a middle between the Tops of the higheſt Mountains and the loweſt Valleys. And we ground this Hypotheſis upon the Account which *Moſes* gives of the Courſe and Motion of that River which water'd Paradiſe; for this River undoubtedly had its Riſe from the Top or ſide of ſome of the *Eaſtern* Mountains, and took its Courſe firſt in one Rapid

Stream, through the midſt of that moſt pleaſant Dale, and then by dividing it ſelf into Four leſſer Streams, they became the Heads of Four of the greateſt and moſt noble Rivers in the World, which ſliding down through the lower Dales, Plains and Valleys, of a great part of *Aſia* and *Africa*; at laſt empty'd themſelves into the Main Ocean at great diſtances.

1. The hight of its Situation gave it a moſt wholeſome, delightful and cheriſhing Air, together with the moſt advantageous and grateful Proſpect over the reſt of the Riſing and Growing World.

2. This Paradiſaical Dale, had all the advantages of a Natural Situation. For firſt of all, it muſt be neceſſarily ſuppos'd, that it had its Situation under the Skirts of the higheſt Mountain in thoſe *Eaſtern* Countries, which defended it from the Cold Blaſts of the *Northern* Wind, from whoſe lofty Top did flow that Rapid Mineral Feeder which took its Courſe through the midſt of it.

It may be ſuppoſed alſo, that it was encompaſſed with leſſer Hills on all ſides excepting the *South-eaſt*, which let into it the warm Enlivening Beams of the Riſing Sun, and which was the only paſſage that gives liberty of Entrance into it.

That theſe Hills were Beautify'd and 3.
Adorn'd with all Kinds of Trees, which might gratifie the Senſes with their freſh and beautiful Colours, always Green, and caſting a moſt pleaſant Shade and delightſome Fragrancy; in which the Active and Chearful Birds Sung their Morning and Evening Anthems.

That theſe Hills encompaſſed a large 4.
and ſpacious Plain, wherein did Spring up and Grow to Perfection all the Species of Herbs, Plants and Flowers that are to be found in the large Volume of Natures Inventory.

In the middle of which Nature had Planted a moſt Curious Grove or Orchard, wherein did Grow all Kinds of Fruit-Trees bearing the choiſeſt of all Fruit, that might either gratifie the Eye or pleaſe the Palate.

The moſt remarkable Trees in this moſt pleaſant Garden, were the Tree of Life and the Tree of Knowledge, which [being taken in a Literal and Natural Senſe] had their Names from the Nature and Quality of the Fruit they Bore.

The former (*viz.*) the Tree of Life Bore a wholſome Fruit, preſerving both the growing Senſitive and Rational Life; and that ſo long as a Body compounded of Matter, conſiſting of contrary Qualities could laſt.

The other (*viz.*) the Tree of Knowledge, Bore an unwholeſome Fruit of a Poyſonous Nature, which deſtroying the Excellent Frame and Temperament of the Body, made it ſubject to Diſeaſes and Pains, and laſt of all to Death and Mortality.

As the former gave us the Experience of Health, Life and Vigour, which Men are ſeldom ſenſible of, whilſt that happy State continues. So the Fruit of the other gave us the Knowledge and ſad Experience of an Unhealthy and Sickly Conſtitution of Body, and Laſtly of Death and Mortality; hence it had its Name of the Tree of Knowledge from the dear bought Experience of its Fruit.

This I confeſs is but a rude Draught of the Terreſtrial Paradiſe; yet I preſume to offer it as a probable Hypotheſis, and I doubt not, [but with Men of better Judgment] it may paſs for ſuch, and ſerve to Illuſtrate their Notions of a more elevated and exalted Nature,

Having given a ſhort and Compendious Deſcription of the Terreſtrial Paradiſe according to the Literal and Natural Notion of it, we ſhall proceed to give a probable Account how *Adam* was introduc'd into it, how long He might continue in it, and how He and his Conſort *Eve* employ'd that time.

Adam the Royal Patriarch of Mankind, being Form'd as to his Body and Organical part of the ſame Matter with the reſt of the Terrene Animals, and having a Rational and Intellectual Soul Infus'd into him ; as ſoon as his weak Members got Strength to Walk abroad from the place of his Nativity, and to take a View of thoſe large Dominions his Bountiful Creator deſign'd to put under his Goverment ; The firſt place he had in Proſpect was this Terreſtrial Paradiſe, toward which his Curioſity led him ; but not finding an Entrance into it, God ſent an Angel to be his Guide, and to Introduce him into its Poſſeſſion, as an earneſt of all the Felicities of this World, and an Emblematical Aſſurance of the Glories of the Cœleſtial Paradiſe.

And no ſooner had this Royal Patriarch enter'd this Pleaſant and Delightful Garden, but all the Birds and Beaſts in Paradiſe [being ſurpriz'd at the ſight of a Creature of a Shape and Form quite different from any of them, and of ſo Divine and Majeſtick a Countenance,] came towards his Preſence to gaze and wonder at him. And a Panick Fear having ſeiz'd them, they became all his Vaſſals.

I will not undertake to determine the time that *Adam* might ſpend in Walking round the Woods and Plains of Paradiſe, whilſt he took a View of all the Creatures, diſtinguiſh'd their Tribes, and gave Names and Offices to them, according to their ſeveral Natures and Qualities. I preſume that it can hardly be imagin'd that one Day could be ſufficient for ſo great a Task.

As *Adam*'s Ambition was to exerciſe and improve his Rational Faculties, by Enquiring into the Natures and Qualities of the Senſitive Animals; no doubt but *Eve* [being no leſs deſirous to improve her Wiſdom and Knowledge, than her Maſter *Adam*] did ſpend that time during his abſence, not only in gratifying her External Senſes, with the fragrant Smell of the fair Flowers of Paradiſe, and Taſting its ſweet Fruit; but in making Enquiries into the Natures and Kinds of Fruits and Simples, in diſtinguiſhing their ſeveral Sorts, and giving Names to them according to their Natures.

And certainly it was not her Ambition to be like God in ſo Divine a Perfection as Wiſdom and Knowledge, made her Forfeit not only the fair Fields and pleaſant Walks of Paradiſe, but Life and Immortality; but her taking a courſe and method to that End, contrary to the expreſs Command of her Creator.

And although it be moſt probable that a Natural Serpent, having a ſpeckled Skin, Beautify'd and Adorn'd with all the variety of Natural Paint, in the moſt freſh and lively Colours, was her Officious Favorite, and preſented to her Royal Hand this Beautiful and Lovely Fruit;

Yet doubtleſs it was her own Natural Serpent, or Concupiſcence, did frame and ſuggeſt to her a Diſcourſe to this effect.

Hath not our Bountiful Creator made this World, with all this great variety of Creatures in it, on purpoſe for the Entertainment of your External Senſes with the ſatisfaction of Enjoying their beloved Objects, as well as the Internal Faculties of the Rational Soul with the Entertainments of Wiſdom and Philoſophy? If you Taſte not then this Lovely Fruit, you evacuate God's Deſign in Creating of it:

Again, If God did not deſign that you ſhould Eat of this Fruit, He would not have made it ſo Beautiful and Deſireable; it's Inconſiſtent with the Natural Goodneſs of your Creator, to lead you into the Fire and oblige you not to Burn, to Inflame your Affection with a ſtrong Deſire, and not to gratifie it.

Further, You cannot but obſerve that God has made all Poyſonous and hurtful Creatures of a leſs comely, if not of a frightful Aſpect, and you have a ſtrong Antipathy againſt them; but this Charming Complexion tempts you to taſte of it. To which the Conſiderative or Rational Faculty reply'd,

Our Bountiful Creator has given us liberty to eat of all the Trees in the Garden, but this is forbidden upon pain of Death.

This is a grand miſtake of the Divine Intention, ſaith Concupiſcence, which was by your Eating of this Fruit to Improve your Knowledge, and therefore he gave it the Name of the Tree of Knowledge. For as you have diſcover'd the Natural differences amongſt the Senſitive Animals, and have given Names to them, your Creator certainly expects that you ſhould underſtand the Natures and differences amongſt Fruits and Vegetables; otherwiſe you will never be compleatly Skill'd in your Natural Philoſophy.

This proud thought of being Wiſe, and a Natural Philoſopher, ſo tickl'd *Adam*, or Reaſon, that he condeſcended that his Bride *Eve*, or Concupiſcence, ſhou'd take a Taſte to Cure her longing.

And ſhe finding it a Fruit as well grateful to the Taſte as pleaſant to the Eye, perſwades *Adam* to a further condeſcention, until a ſecond Conſideration made him feel the miſerable Effects of it, as well in his Conſcience as in the Conſtitution of his Body; which his Reaſon being aſham'd of, he fled from the Preſence of God, who uſually, as it's believ'd by ſome learn'd Authors, came down in the Evening to Diſcourſe with the young Philoſopher, who finding himſelf Naked, or at a loſs for Arguments to defend his Guilt and Shame, endeavour'd to cover it with the thin Figg-leaves of Excuſes.

A

DISCOURSE

Concerning the
CONFLAGRATION
OF THIS
Material World;
THE
Local Hell:
ITS
OUTMOST BOUNDARIES,
OR
Abrahams Gulph.

A
DISCOURSE
Concerning the
CONFLAGRATION
OF THIS
Material World.

HAving in the former part of the Hiſtory of Matter, given an Account of ſuch Preternatural Accidents as have diſturbed, and ſometimes in all Ages Interrupted the Regular Courſe of Nature; And having demonſtrated that theſe Preternatural diſturbances, were occaſion'd by that Natural Strife, that happens between the contrary Qualities of Heat and Cold, Fire and Water:

And having alſo ſhewn how Water, by uniting her forces in the Time of *Noah*, chang'd this Terraqueous Globe for ſome time into a Wateriſh Planet, by effecting an univerſal Deluge which covered the Tops of the higheſt Mountains Fifteen Cubits;

And how the Central Fire has frequently threatned, not only by Univerſal Concuſſions, and Earthquakes, to unhinge its Foundations, but alſo by Extraordinary and moſt Violent Eruptions of Fire and Vulcano's to break the Structure and Temperament of it, and turn it into a Globe of Fire, or Fiery Planet;

Now as a great many Learned Men in all Ages, have been inquiſitive into the Natural Cauſes of this Univerſal Deluge, and the Difficulty they met with, being to find Water ſufficient to effect it, without a Miracle;

So a great many Learned undertakers, have been no leſs Induſtrious to find Fire ſufficient to dry up the Seas and Rivers, and then to Effect an Univerſal Conflagration of this Material World:

Theſe two Difficulties [in my Opinion] might have been eaſily remov'd, mov'd, if they had underſtood better the Structure of the Earth, and the Nature and Quality of that Matter which makes up the Conſtituent parts of it.

It will be neceſſary therefore, in order to our Eſtabliſhing a Well-grounded Hypotheſis concerning the Univerſal Conflagration in a Natural way, to Reſume what we have formerly Obſerved concerning Matter in General; which we have divided into Three Claſſes [*viz.*] Volatile, Fixt, and Fluid; and to ſhew that theſe Three different Claſs's of Matter, bear equal Proportions one to an other, and in the Structure of the Earth occupie the ſame proportion of Place.

The Volatile Claſs [which we call the Central Fire conſiſting of Æthereal, Nitrous, Sulphurous, and Bituminous Particles] bears proportion to one Third part of the Diameter; And this Claſs makes the Earths Equilibrium; and by running a perpetual Round within the Circle of its own Infernal Vault, Carries about with it this Cruſt or Shell of fixt and fluid Matter whereupon we live, once in every Twentyfour hours, and this we call the Diurnal Motion of the Earth.

The fixt and fluid Matter being intermixt, like the Fleſh, Blood, and Bones, or Heterogeneous parts of a Compounded Body, bears proportion to the other Two parts of the Diameter.

The fixt Claſs of Matter Conſiſts of Parts, Combuſtible, Calcinable, Liquifiable, and Inflammable.

The fluid Claſs conſiſts of Water; which is either Subterranean, or Superterranean.

The Subterranean Water, either circulates through the larger Veins of the Earth, or pervades the Strait Pores of the Denſeſt Matter.

That which Circulates through the Larger Veins, does not only [by being Tranſmuted into Air] feed and nouriſh the Central Flame, but alſo hampers it and keeps it within the Limits and Boundaries of its own Infernal Kingdom.

That which pervades the Strait Pores of Denſe Matter, does as well feed and nouriſh the Pneumatical and Native Spirits of that Matter, as shackles them, by keeping of them within their little Cells, which otherwiſe would break out, and ſet on fire the more Combuſtible part of it.

The Superterraneous Waters do by maintaining a conſtant Communication between the Subterranean and Aireal Waters, and by the falling of Plentiful Showers of Rain upon the Earths Surface, preſerve it from being either over-cruſted, or ſet on Fire by the External Heat of the Suns Influence upon it.

By theſe Diviſions and Computations it is apparent, that one Third part of this Globe is Volatile, another Third part Combuſtible and Inflammable, and only a Third part Fluid. Which Third part preſerves the Harmony and Conſpiracy of its Parts, which makes the Cement and Temperament of the whole Body, and if this ſhould once be broken, and the Volatile and Fluid ſuffered to act their Antipathies upon each other, the whole Frame and Structure would preſently be diſſolved, and all things ſhufled into their Original Chaos and Confuſion.

Now as in all Compounded Bodies, which have any degree of Life or Vital Cement in them, the Vital Flame is fed and nouriſhed by the Radical Moiſture; which, as it waſts and conſumes,

ſumes, the Exterior Parts of the Body become Dry, Withered, and more Combuſtible; and at the laſt the whole Body is thrown into a Feveriſh Burning, which continues until the Vital Flame be Extinguiſh'd, and the Native Spirits fly out: So in this great Body of the Earth, the Central Fire, which is the Vital Flame of it, by continual feeding upon the Fluid Matter, does gradually waſt and conſume it.

And this is not only obſervable in our Sinking of Pits, where we generally meet with the upper Strata or Beds of Stone and Cole drained from their Wateriſh Feeders, their Native Spirits Exhal'd; but alſo ſeveral Ancient Springs ſunk down in their Veins; Large Rivers decreas'd in their Water Courſes; and the Seas in ſeveral Countries to have loſt Ground, as in *Ægypt* and *Holland*, which undoubtedly [in former Ages] have been in the poſſeſſion of the Main Ocean. From theſe general Deſiccations of the Fluid part of the Globe we conclude that [according to the Natural Courſe of things in this World] the Volatile Matter, as the Central Fire, will in proceſs of time ſo far gain ground upon the Fluid part of it, as to break out upon the Combuſtible and Inflammable part, and by ſetting them firſt on fire, the whole Globe will be turn'd into a fiery Planet; from whoſe Scorching and fiery Atmoſphere, the Fluid Matter ſhall be forc'd to fly and range about in thick Fogs and Wateriſh Miſts, until they fix and ſettle in a Wateriſh Vortex, dividing the Cœleſtial Regions from the Smoaky and Flaming Atmoſphere of this Burning Globe; and its moſt probable that by that vaſt Gulph which Father *Abraham* told *Dives* was placed between Heaven and Hell, is only meant theſe Fogs and Wateriſh Miſts, which ſhall divide the outmoſt Boundaries of them; through which the Damned Souls may probaly ſee, hear, and have ſome Interlocution with thoſe in the Cœleſtial Regions; tho' all this ſhall only inflame and aggravate their Torments, when they ſhall ſee *Abraham*, *Iſaac* and *Jacob*, in the Kingdom of Heaven, and themſelves ſhut out, by this unpaſſable Gulph.

Having already made it apparent, that when the confus'd Chaos of Matter ſettled into the Form of this Habitable Globe, the Volatile part of it by a Natural tendency of Motion, ſettled in the Central parts;

And that the Central Vault, wherein this Volatile and Fiery Matter is contain'd, bears Proportion to a Third part of the whole, ſeems to be moſt probable, as well from Scripture as Natural Reaſon;

For the Scripture repreſents Hell as a *Lake of Fire*, Mat. 9. 43. Rev. 20. 10, 15. And this Lake of Fire or Local Hell is commonly called *Infernus*, which ſignifies a place *Infra nos*, *i. e.* below the *Cortex* or Outer coat of the Fix'd Matter whereon we Live; its alſo call'd *Tartarus*, which ſignifies the Pit of Hell, or that Infernal Dungeon fill'd with Fire and Brimſtone, that Burns and Scorcheth, but caſts no Light;

And that this Infernal Lake of Fire was in the Central part of the Earth, was not only the Opinion of the *Roman* Church, which has undertaken to give the Dimenſions of it; but agrees with the Opinions of moſt of the Ancient Fathers and Doctors of Chriſtianity;

It is alſo agreable with the Opinions of our own Doctors, who aſſert, that at the Day of Judgment, when the Sentence againſt the Wicked ſhall be pronounced in theſe Words, *Depart from me ye Curſed into everlaſting Fire*, the Central Fire ſhall break out, and cauſe an Univerſal Conflagration of this Material World; for then the Central Hell ſhall be enlarged, and the Aerial Regions which are now the Devils Territories ſhall be fill'd with Smoak and Fire, and the Damned confin'd to that everlaſting Smother, where the Worm ſhall never die, and the Fire ſhall never be quenched; by which words its more than probable that this Terraqueous Globe ſhall be changed into a Fiery Planet, that the Aerial Heavens ſhall become a Flaming Atmoſphere, and that this ſhall be the Eternal State of this World.

He that would deſire further Satisfaction in this particular, may conſult Dr. *Hackwel* and Mr. *Ray*'s Diſcourſes concerning the Conflagration of this World; my intention being only to ſhew, that it is moſt probable that there is a Central Vault of large Dimenſions, filled with Volatile Matter, conſiſting of Nitre, Bitumen, and Sulphur; and that it is as probable that this may break out, and ſet the Earth on Fire, as its poſſible for a Man to Die of a Burning Fever.

A Short

TREATISE
OF
Meteorology,

With ſome

Obſervations concerning the Changes and Alterations of the Weather.

A Short TREATISE OF Meteorology,

CHAP. I.

Of Vapours, and Exhalations, &c.

VApours and Exhalations are the Perſpirations of this Terraqueous Globe, and are caus'd as well by the Internal Heat and Fermentation of it, as the External Influence of the Sun, which by opening of its Pores, ſucketh them out, and raiſeth them up into the Regions of the Air.

Theſe Vapours and Exhalations are the Material Cauſe of the ſeveral Kinds of Meteors that are generated within the Compaſs of the Atmoſphere; which extends as high as the fiery *Globuli* of the Sun make their Rebound from the ſolid Surface of the Earth, and Fluid Superficies of the Waters, and no higher.

The higher the Sun aſcends in the Meridian, it ſtrikes down theſe fiery *Globuli* with greater force upon the Earth and Waters; and conſequently they riſe higher, and elevate the Vapours with them. So that the Atmoſphere is higher or lower in ſeveral parts of the Earth, as the Sun riſeth higher or lower in the Meridian, and its Beams are darted down in a more direct or oblique Line.

And as the lowneſs of our Northern Atmoſphere, cauſeth the Sterility and Barrenneſs of the Northern Mountains; ſo the height of the Southern Atmoſphere, cauſeth thoſe Mountains in the Æquinoctial and Southern Regions to be more Fertile and Productive.

CHAP. II.

Of the Efficient Cauſes of all Meteors; and firſt of Heat.

BY Heat is not to be underſtood the Element of Fire, which *Ariſtotle* and his Followers conceited to be under the Concave of the Moon, [there being no ſuch Element there] but by Heat is meant that Internal Heat and Fermentation which is in the Body of the Earth, and that Natural Fire which is originally and eſſentially in the Body of the Sun, the Vehicle of External Heat, which Streams out from every part of that Fiery Globe, giving Heat, Light, and enlivening Vegetations to the whole Material World, being within the Compaſs of its Fiery and Luminous Atmoſphere.

Theſe Streams of Heat and Light [which is only the ſhadow of Heat] being Darted through the Regions of the Air in Strait Lines, and ſingle Rayes, are not perceivably Hot or Cold, no more than the Light of a Candle without the Sphere of its Heat; but being doubled by multiplyed Reflections, and Reboundings from the ſolid Surface of the Earth, does increaſe its Heat, as the Reflections are multiplyed and rebounded; which makes it hotter againſt a Wall, than upon the plane Ground, and in the Vallies, than upon the Mountains.

We muſt therefore diſtinguiſh between thoſe ſingle Rayes of Heat, which dart through the Air in inſtants, which are neither perceivably hot nor cold, and the Heat upon the Superficies of the Earth, which being contracted by an Artificial Glaſs, is Real Fire.

The Eſſential Qualities of Heat are Calefaction, Elevation, Rarefaction, Liquefaction, and Conſolidation, as it meets with Matter Prediſpoſed to receive its Effects.

CHAP. III.

Of Cold, the other efficient Cauſe of Meteors.

BY Cold is not meant a bare privation of Heat, as former Philoſophers did conceit; but a real Body, of a Subtile Sublimated and Homogeneous Nature, and of a cold and frigid Quality. Its proper place of Exiſtence is between this Earths Atmoſphere, and the Atmoſphere of the Moon, which is our next Neighbouring Globe; and by the riſing and falling of this main Body of Cold, are cauſed the ſeveral Changes and Alterations of the Weather with us.

The Cauſe of its Riſing and Falling, is the preſſures of theſe two Atmoſpheres between which it is plac'd: When the wateriſh Atmoſphere of the Moon preſſeth it down, it cauſeth Storms and Tempeſts here upon this Globe; And when it Riſes, it cauſes the ſame in the Moon.

The Riſing and Falling of this Main Body of Cold, is ſometimes alſo occaſion'd ſion'd by its Dilating and Contracting of it ſelf.

Now as the Suns Beams are hotter in their Reflections upon the Earth, than in the Sun it ſelf, ſo theſe Cold Rays which are darted from this Main Body of Cold, being increas'd and multiply'd by Reflection, from the Mountains and Rivers, are much colder than the Main Body of Cold in its own Sphere. Theſe Reflected *Globuli* of Cold may be term'd the Lower or Ground-cold; becauſe in Summer it penetrates the Earth, and in Winter it ſeldom riſes higher than the Tops of the higheſt Mountains, unleſs when it joins with the Main Body, and then it cauſeth great Storms of Froſt and Snow, *&c.*

This Lower or Ground-cold, is commonly the Rear-guard and Van-guard of the Sun, always going before and following it; and its moſt perceivable in the Evening and Morning Twilights; eſpecially, by Birds and Aerial Animals, whoſe Bodies do ſo ſympathize with the Air, that they can more quickly perceive the Change of Weather (eſpecially the riſing of a Storm of Rain or Snow) than any of the Terrene Animals; and this they commonly diſcover by their Flying high or low, or Flocking together; or ſometimes by different Notes or Voices. This occaſion'd the Ancient Augurs to conceit them Prophets, *&c.*

The Eſſential Qualities and Effects of Cold in general, are Frigefaction, Congelation, and ſometimes Petrefaction; and when the lower Cold is Contracted, either by Art, or *Proprio motu*, it Starves and Freezes, as the Fire Burns and Scorcheth.

This lower Cold contracts and dilates it ſelf, as it meets with Oppoſition from the contrary Quality of Heat and Fire.

The Effects of the lower Cold when it enters the Earth.

By Antiperiſtaſis it Fires Damps in Collieries, Mines, burning Mountains, and Vulcano's.

When it lyes upon the Earth, it cauſeth Dews and hoar Froſts, it ſucks out Damps and corrupted Air out of Under-ground Works, *&c.*

CHAP. IV.

Of the Air, or Medium wherein all Meteors are Generated.

THE Air is a Vaſt Medium or Expanſion, fill'd with Rarify'd Vapours and Exhalations; which like Water would Stagnate, unleſs by a Daily addition of Rarify'd Vapours or Wind, it were put into a Flux and Reflux, as the Sea is by the addition of Rivers continually flowing into it from all ſides.

When the Air is Calm, then are the Meteors Generated; when by the Wind the Air is put into a violent Flux and Reflux, they are Broken and Diſpapear.

CHAP. V.

Of Fiery Meteors, &c.

THE Lower Cold which follows the Sun in the Evening Twilight, continues its Operation for ſome Hours after its Beams are out of ſight, and no longer ; [the middle of the Night being for the moſt part a Calm as well in Winter as Summer] during which time of its Operation, it cauſeth all thoſe Fiery Meteors which the former Philoſophers gave ſeveral Names to, as falling Stars, Rods, Beams, *Ignes Fatui* or *Will with Wiſp*, *&c.* according as they differ'd in Matter, Magnitude, and manner of Appearance ; ſome Conſiſting of a hot and dry Exhalation, others of an Exhalation mix'd with a Viſcous and Unctious Matter, a Third of a ſimple and unmix'd Exhalation : All theſe are Generated in the Lower Regions of the Air, the Matter of them being drawn up out of the Earth, Waters, and Bituminous Boggs and Moſſes, by the Sun's Influence upon them, eſpecially in the Spring Months. For then the

Subterranean Heat draws out to communicate with its Main Body; for as at this time all Animals renew their Hair, clear their Blood from groſs Humours, ſo doth this great Animal the Earth purge her ſelf of groſs Humours, by Muſhrooms, and other Pinguid Evaporations; for then the Subterranean Heat drawing out to communicate with the External Heat, brings forth of the Earth theſe Mineral Spirits and Pinguid Perſpirations, in ſo plentiful a meaſure, [which being taken up into the Air are Condens'd into Clouds, and fall down again upon the Earth in ſuch Fertilizing Showers] that the Pſalmiſt tells us the Clouds at this Seaſon drop down Fatneſs. Theſe Hot and Fiery Exhalations which are flying about, ſcatter'd and diſpers'd in the Lower Region of the Air, being ſeiz'd on by the Evening Cold, are forc'd in Defence of themſelves to unite their Forces, and being united do Fire upon their Grand Enemy (*viz.*) Cold.

Some Fire in a Round Figure like a Fireball, which the Meteorologiſts call a Falling Star; ſome in a long Train, either Strait or Crooked, and theſe they call'd by the name of Rods or Beams;

others being ſimple and unmix'd Exhalations, flaſh out in Lightning, like Gun-powder upon a Table; others being mix'd with a Viſcous and Unctious kind of Matter Fire near the Earth, are mov'd by the Motion of the Air, or an eaſie and ſoft Wind, or are drawn down in purſuit of their Enemy Cold, to Waters, Moſſes, Boggs, and Heaths, ſtill Burning like a Candle in a Lanthorn, till their Unctious Matter be Exhauſt'd, and then they leave a Liquid Jelly upon the Earth.

This Meteor they call *Will with Wiſp*, or *Ignis Fatuus*, or Fool's Fire, becauſe Ignorant People conceiting it to be a Spirit, keep their Eyes upon it, until they loſe their way, and then are apt to give a dreadful Account of a Spirit they met with, which miſled them.

If any of theſe Fiery Exhalations eſcape the Evening Cold, the Morning Cold about break of Day, before it be drawn down to the Waters, Fires them, by cauſing them to purſue the ſame Method of Self-defence they took in the Evening.

CHAP.

CHAP. VI.

Of Comets, &c.

AMongſt the Fiery Meteors, all the former Philoſophers reckon'd Comets to be the moſt Remarkable: And they gave ſuch Diſmal Accounts of the Dreadful Effects of them, that their very Appearance put the World under a great Conſternation. But in my Opinion, the World [according to the Old Proverb] was more affraid than hurt by them.

For that Comets are Fiery Meteors, and have ſuch dreadful Effects following their Appearance, is a Miſtake in Meteorology ſo palpable, that it needs no Confutation:

That which we call a Comet, being no more than a Star of a Fiery and Luminous Body, in Conjunction with another Star of an Opake and Wateriſh Subſtance, or a Vaſt Cæleſtial Cloud, which by receiving into its Body the Bright Rays of the Luminous Star, becomes Tranſlucent, and appears to us in the Form and Figure of a Luminous or Fiery Globe; and by emitting Beams or Streams of Light, it appears to be a Fiery and Burning Meteor, which by the Meteorologiſts is call'd a Comet.

If this Conjunction and Interpoſition be Centrical, it ſends forth its Beams of Light on every Side; and this we call a Bearded Comet.

If the Interpoſition be not Centrical, but the Luminous Star be higher or lower, or on one ſide, it ſends forth a Beam or Stream of Light upward or downward, or to one ſide; and this Beam or Stream of Light, is call'd the Tail of the Comet.

The Appearance of this Comet continues until their different Motions have ſeparated them.

A demonſtration of this you may have ſeveral Evenings, when a black wateriſh Cloud interpoſeth between us and the Body of the Sun; if the Interpoſition be Centrical, the Sun's Beams ſtream out every way; if the Sun be higher, it ſends forth its Beams of Light downward; if lower, upward, or to one ſide, according to the Interpoſition of the Cloud.

Againſt this Hypotheſis, it may be Objected, that there is no ſuch thing in

Nature as an Opake Wateriſh Cœleſtial Body.

To which I anſwer, That the Moon is an Opake Globe of a Wateriſh Subſtance; and if its Natural Courſe and Motion was not within the compaſs of the Suns Atmoſphere, it would be to us inviſible: So there may be [for any thing that we know] Thouſands of Opake Globes, within the Vaſt Expanſion of the Cœleſtial Spheres, which are never viſible to us, but when they fall into Conjunction, or Oppoſition, with a Luminous Star: And when theſe Opake Globes are of a Round and Wateriſh Subſtance, they appear to us in the Form of Comets.

Again, it is moſt probable that all theſe New Stars, which have appear'd for ſome time, and then diſappear'd, [which Aſtronomers have given ſuch Remarkable Accounts of,] are only Opake Globes, made viſible for ſome time, by their being in Conjunction or Oppoſition to a Luminous Star, and when their different Motions have ſeparated them the Opake Star hath diſappear'd.

CHAP.

CHAP. VII.

Of Thunder, its Cauſes and Effects.

OF all Fiery Meteors, there are none ſo dreadful as Thunder, which being an Aerial Fire Damp, the Nature and Notion of it will be beſt illuſtrated by comparing it to an Aerial Battle between theſe Two powerful and irreconcilable Enemies, Fire and Water.

The Army of Fire conſiſts of Hot and Fiery Exhalations, raiſed out of the Earth and Bituminous Bogs by the Influence and Heat of the Sun; eſpecially out of the *South-eaſt*, full *Eaſt*, and *North-eaſt* Parts of this Globe: Thoſe vaſt and ſpacious Continents affording moſt of thoſe hot and fiery Soldiers.

The General that Commands in Chief, and which leads them forth into the Field, is a Sulphurous and *Eaſt* Wind.

The Army of Water conſiſts of cold and moiſt Vapours, raiſed out of the *Southern* and *Weſtern* Ocean.

Their General that leads them forth to Battle, is a cold moiſt *Weſt* Wind: For its to be obſerv'd, that for ſome time before the Thunder begins, and whilſt it continues, the Blaſts of Wind always blow from contrary Points, and the Clouds gather and march up in the full Face of the Wind, which always Blows from an *Eaſt* Quarter.

Theſe Two Armies being Form'd into two Wings, and two Main Bodies; Firſt Fire, being the more Active and Volatile, ſends forth a Detachment of fiery Chariots, from the *South-eaſt* Wing; which being met with by another Detachment of Vaporous Clouds from the *South-weſt* Wing, the Battle begins: And thoſe hot and fiery Exhalations that we ſee riding in Chariots of Fiery Clouds, like Pillars of Tranſlucent Smoke, being inclos'd and ſurrounded with this Vaporous Cloud, are forc'd to unite all their Forces together, that, *Vis Unita* being *Fortior*, they may the better be able to defend themſelves, and deſtroy the Enemy.

No ſooner then the Forces on both Sides are united, but the Fiery Exhalations diſcharge upon the Wateriſh Cloud, in Fire and Lightning.

The Thundring Noiſe we hear is occaſion'd by the Oppoſition they met with, and the Breach of the Cloud; which falls down in great and dreadful Showers of Rain upon the Earth; the Drops of Water being greater or leſs as the Breach of the Cloud is at a higher or lower diſtance from the Earth.

After the Thundering Battel is thus begun, the other Wings engage, and we hear the Thundering Sound of the Battel both *South-eaſt* and *North-weſt*. The Battel by this time growing very hot, the Main Bodies engage; and then nothing is to be heard but a Thundering Noiſe, with continual Flaſhes of Lightning, and dreadful Showers of Rain, falling down from the broken Clouds.

And ſometimes random Shots flie about, kill both Men and Beaſts, fire and throw down Houſes, ſplit great Trees and Rocks, and tear the very Earth.

For it is no more impoſſible for the more Earthy Part of an Exhalation to be on a ſudden Petrefied into Stone [which we call the Thunder-bolt] in the Body of a Cloud; than that Laxe Matter ſhould be Petrefied into a Stone in the Body of the Earth; the Antiperiſtatical Cauſe being the ſame in both.

Theſe two Irreconcilable Enemies ſtill keep the Field, until one of them be utterly deſtroy'd.

If the fiery Exhalations keep the Field, the *Eaſt* Wind blows ſtill hot and ſulphurous.

If the Vapours get the Victory, the *Weſt* Wind blows cold and moiſt, the Sky is clear, the Air is cold, the Battel is over, and the Earth Buries the Dead and gets the Spoil. If any ſhould think this Account of Thunder to be rather Figment and Romance, than true Natural Philoſophy, I adviſe him [when ever he ſees the Thunder Packs riſing White and Tranſlucent in a *South-eaſt* Point, when he feels the Air hot and Sulphurous, with ſome contrary Blaſts of Wind coming whiſtling from the *Weſt*] that he make haſte on to the Top of *Croſsfelt*, or ſome other high Mountain, that gives a Proſpect to both *Eaſt* and *Weſt*, and he may be inform'd both as to the truth and manner of this Aerial Battle.

CHAP. VIII.

Of Vaporous Meteors; and firſt of Dews, and Hoar Froſts.

DEws are Vapours Condens'd upon the Surface of the Earth, by the Evening and Morning Cold, theſe being the times of the Dews falling.

I have obſerv'd that ſometimes about Mid-afternoon, the under-ground Cold being impatient of a long Summers Days Confinement, has broke out, and condens'd the Vapours into a Dew; which by the firſt Reflection of the Sun was taken up into the Air, and a viſcous Matter left upon the Graſs, like Cobwebs or fine Threds, which we call *Tela Beatæ Mariæ*; and theſe Vapours being condens'd into a Cloud, will fall down again in a Shower of Rain about Sun-ſetting.

But the uſual time when the Evening Dews fall, is immediately after the Sun is Set; for then the Lower Cold lyeth upon the Ground, and as the Sun goes down it riſeth.

The Morning Dews begin to fall about break of Day: For about that time the Waters being colder than the Mountains, draw down the Lower Cold from the Mountains to them.

And it bringing the Vapours along with it, ſits Regent upon the Waters, in thick Foggs and wateriſh Miſts, until the Influence of the Sun, by warming of the Waters, either ſcattereth and diſperſeth the Vapours, or forceth them to riſe up to the Mountains, or the cool Regions of the Air, leaving only Dews upon the Ground behind them.

Theſe Dews, when the Cold is contracted and freezing, become Hoar Froſts; for a dilated Cold cauſeth Dews, and a contracted Cold Froſts.

In the Spring Months, when the Subterranean Heat draws out from its Winter Quarters to join with the external Heat of the Atmoſphere, it brings out of the Earth with it ſome of the finer Mineral Spirits; and the Sun-beams being then Powerful and Attractive, do ſuck up theſe Mineral Spirits, with the ſweet Efluvia and Perſpirations of Herbs and Flowers; which the Evening and Morning Cold condenſeth into Honey-dews, or Manna. In theſe Months, the Sun's Beams are ſo ſtrong and vigorous, that they will draw up Frog-ſpawn; which being receiv'd into the Body of a warm Cloud, will preſently be Form'd into little Frogs, which will fall down upon the Earth in theſe Fertilizing Spring Showers: Sometimes they will ſuck up Blood, which will fall down in Showers of Rain, eſpecially after Bloody Battels fought at great diſtances: So Corn, *&c.* will fall down in Rain. But theſe are *Magnalia Naturæ.*

CHAP. IX.

Of Rain, Hail, and Snow.

RAin, Hail, and Snow, are the ſame as to their Matter. The difference among them is only Accidental; Hail being only Drops of Rain frozen in their falling down from a broken Cloud, by a contract'd Body of the Lower Cold; Snow being Vapours frozen before they be Condens'd into a Cloud.

Of Rain.

Rain is either general or particular, higher or lower.

Obſervations concerning Rain.

1. When the Evening Dew falls before Sun-ſet, and the Sun draws it up again, the Evening Cold condenſeth it into a Cloud, and it falls down in a Shower of Rain in the Evening Twilight.

When the Evening Cold condenſeth not the Vapours into Dews, but draws them up to the Tops of the Mountains, and thence into the Cold Regions of the Air, they fall down in Rain about break of Day. 2.

When the Morning Cold condenſeth not the Dews, but draws up the Vapours to the Tops of the Mountains, and thence into the Cold Regions of the Air, they fall down in Rain about Ten a Clock or ſooner, and ſo continues a general Rain for ſome Hours together, the Evening and Morning Vapours being join'd. 3.

When the Air is Calm, and the Waters colder than the Mountains, the Vapours draw down to the Waters, and there they lie in a thick Fogg or Miſt, until the Sun by warming of the Waters, cauſeth them to riſe about Nine or Ten a Clock: if the Morning Cold dilate it ſelf, it raiſeth the Vapours to the middle of the Mountains, where they continue in a thick Fogg, the Mountain Tops being clear, until the Vapours be all ſpent in a mizling kind of Rain. 4.

When the Morning Cold divides it ſelf into many little contracted Bodies, 5.

theſe leſſer Bodies of contracted Cold condenſe the Vapours, and they fall down in particular Showers, ſome not Mountain height; ſo that one may ſometimes go through a Shower of Rain [if he pleaſe] which will fall upon the Skirts of the Mountains, when at the ſame time 'tis clear both above and below the Shower. Thus a Man may be above the Clouds and the Rain.

6. When the Morning Cold draws the Miſts and the Foggs from the Waters, *gradatim* [or in Sops, as we call it] to the Tops of the Mountains, and they Trall there too and fro, ſometimes riſing, and then falling again, the Diſpute being between the Water-cold and the Mountain cold, whether ſhould get the Prize,

If at the laſt theſe Tralling Miſts or Vapours be lifted up into the Cold Regions of the Air, and be there Condens'd by ſome of thoſe leſſer Bodies of Cold which are flying about, they fall down in particular Showers within an Hour or leſs after they be taken up; ſo quick is the return of Vapours into Showers of Rain.

CHAP. X.

Of Hail and Snow.

OBSERVATIONS.

WHen theſe leſſer Bodies of contracted Cold, are ſo placed one above another, having diſtances of warm Air betwixt them, [as oftentimes it happens in very hot Weather, for the greater the Heat is, the more narrowly do theſe leſſer Bodies of Cold contract themſelves] if any of the higher Bodies of Cold condenſe the Vapours into a Cloud, and it break, and fall down in drops of Rain through a Body of more contracted Cold, it freezeth theſe drops of Rain into Hail-Stones.

I have obſerv'd a Shower of Rain upon the Mountains, the ſame a Shower of Hail upon the Skirts of the Mountains, the ſame diſſolved again into a Shower of Rain in the Vallies. I have obſerv'd alſo a Shower of Hail at one end of the Town, the ſame a Shower of Rain at the other end;

the contracted Body of Cold that cauſed the Hail, being not a Quarter of a Mile in Circumference.

Of Snow.

When the Lower Cold riſeth, and the Upper Cold falleth, and ſo ſtraitens the Sphere of Rarefaction that the Wind blows thin, as out of a contracted Mouth, the Vapours are frozen in Snow before they be condenſed into a Cloud, and the ſhower of Snow only at firſt covers the Tops of the Mountains; but as ſoon as the Lower Cold riſeth Mountain height, and joyns with the Upper Cold, the Snow falls down into the Vallies and covers the Earth.

OBSERVATIONS.

1. When the Wind has blown for ſome time S. E. or full S. or S. W. we muſt expect a great and general Rain; for theſe Winds blowing from ſuch Regions where the Atmoſphere riſes high, bring over with them the greateſt Quantity of Vapours; which our Mountanous

Country condenſeth into Clouds, which fall down in great and general Rains.

And this is the reaſon why thoſe Countries where moſt of the Vapours riſe, have the leaſt of Rain; which want is ſupplied by great Dews, which the Evening and Morning Cold condenſeth upon the Ground.

For where the Atmoſphere riſeth high, the Lower and Higher Cold never meet, which is the cauſe of their want of Rain.

When the Wind blows N. or N. E. or full E. we have ſeldom Rain, but great Flights of Snow. For the Atmoſphere in thoſe Parts being very low [eſpecially in Winter] and the Mouth of the Sphere of Rarefaction very ſtrait, the Wind that blows from theſe Quarters is ſo very thin and freezing, that thoſe few Vapours which are brought from thoſe places for the moſt part fall down in Snow. 2.

CHAP. XI.

Of Froſt, and Thaw, &c.

FRoſt and Thaw are the Effects of quite different Cauſes; the one being occaſion'd by the Influence of Heat, the other of Cold; and theſe two contrary Qualities do not give ground one to another without great ſtruggle and conteſt.

The firſt beginning of Freezing is at the Waters, and this we call a Water Froſt; its the Effect or Operation of the Morning Cold; which drawing down to the Waters in the Morning Twilight, and carrying the Vapours along with it, leaves a Wateriſh Hoar Froſt upon the Ground behind it.

Theſe Vapours lie upon the Waters until Nine a Clock; for by that time the Influence of Heat having warm'd the Waters, forceth them to remove their Quarters, firſt to the cold Tops of the Mountains, and thence to the cooler Regions of the Air, from whence they fall down in Showers of Rain about

Twelve a Clock, this Froſt only gains the Waters, Vallies, and Plains.

The Second Morning, the Cold doubles its Force, and Glaceates the Waters, congeals the Earth, and riſeth to the middle of the Mountains; [their Tops ſtill continuing in the poſſeſſion of Heat] This degree of Cold is overpowered by the Influence of Heat about Two a Clock, and falls down in Rain in the Evening Twilight.

The Third Morning, the Cold trebles its force, and gains the Tops of the Mountains. And the Influence of Heat commonly recovers this loſt Ground a little before the Sun ſet; and in the Morning Twilight it falls down in a ſhower of Snow, covering only the Tops of the Higheſt Mountains.

The Upper and Lower Cold being now united, the Froſt keeps its poſſeſſion of the Earth and Waters ſometimes for a Month or more together; and in ſome Countries [lying at a diſtance from the Sea] the whole Winter Quarter; the Wind all the time blowing Cold and Thin, the Mouth of the Sphere of Rarefaction being ſtraitned by the joyning of the Higher and Lower Cold.

During the Time that the Earth and Waters continue in the poſſeſſion of Froſt and Snow, the Subterranean Heat breaks out of the Springs and Mineral Feeders, and joyning with the Heat of the Sun Regeles the Spring-heads, and part of the Rivers, gaining them intirely into its poſſeſſion: But the general Froſt continues until the Vapours riſing from the Southern or Weſtern Ocean, recover the Wind into ſome of the Solar Quarters; which opening the Sphere of Rarefaction, the Wind blows warm and moiſt. For as the ſame Breath from an open Mouth warms ones Fingers, ſo from a contracted Mouth it will cool his Porridge.

The general Froſt in the Northern Countries near the Pole, and in Countries at a diſtance from the Sea, ſeldom Regeles, until the Subterranean Heat break forth, and joyn with the Heat of the approaching Sun, and then the Froſt and Snow is diſſolved in a very ſhort time; and the Spring comes on much ſooner than in thoſe Countries where the Regelation is more gradual.

Thus as a conſtant Intercourſe of Day and Night gives the Active Animals liberty, by Reſt and Sleep, to recover their waſted Strength and Spirits; ſo an Annual return of Froſt and Snow, recovers and repairs the Strength and Spirits of the Earth, which had been ſpent in the preceeding Summers Productions. For in this Natural World all things are repair'd by corrupting, preſerv'd by periſhing, and reviv'd by dying.

As the Operation of Cold did gradually gain ground upon the Influence of Heat; ſo by the ſame methods and degrees Heat recovers its loſt ground, the Freſh or Thaw beginning firſt at the Waters, and from thence riſeth up to the Plains and Vallies; and laſt of all the Tops of the Mountains [which are for ſometime kept in the poſſeſſion of Froſt and Cold, after the lower parts of the Earth be regeled] are gained.

CHAP. XII.

Of the Sphere of Rarefaction.

THE Sphere of Rarefaction is a Sphere of Heat, wherein the Suns Reflections meet, and unite themſelves in their own defence againſt the Upper and Lower Cold.

And being placed in a middle between them, it riſeth or falleth, openeth or cloſeth as it prevails upon them, or as they open or cloſe, riſe or fall. This Sphere of Heat, by Rarefying of Vapours and Exhalations, cauſeth Wind.

That Heat is the cauſe of Wind, is apparent from the Experience of ſuch People, who, to cauſe Wind, uſually ſet Chaff, Seeds, or Straw on Fire. And when Houſes or Towns are accidentally thus ſet on Fire, the Heat of the Flame, by Rarefying of the Vapours and Exhalations round about, will raiſe the Wind to ſo great a height, as will make it a matter of great difficulty to quench the Flame.

CHAP.

CHAP. XIII.

Of Wind, Helms, and Arches.

WInd is the Nitrous part of Vapour and Exhalation, Rarified and Dilated by the Sphere of Rarefaction.

The Winds are either higher or lower, as the Sphere of Rarefaction riſeth or falleth; they are thicker or thinner, as it openeth or cloſeth; they are Moiſt, Hot, or Dry, as they have more or leſs of Vapour or Exhalation in them.

The *Pabulum* of Winds, is commonly called a Helm, from the Greek Word ἀλῶς, *ex* ἄω, which ſignifies *Spiro*, to Breath; and they are

Either { *Viſible*
or
Inviſible.

The Viſible Helms, are

Either { *Opake*,
Mixt, or
Tranſlucent.

Theſe Wind Helms fix upon the coldeſt parts of the Globe, as the Gibboſity of the Sea, the Tops of the higheſt Mountains, Mountain-Heaths, Waters, and Rivers.

The Matter on which theſe Helms conſiſt, is a Vaporous Miſt, which as it endeavours to riſe up, is preſſed down by the Sphere of Rarefaction; and by Rarifying the Nitrous part of it [which is always uppermoſt] into Wind, the ſtill Body of the Air is put into a violent Flux, every Blaſt of Wind being only a Wave of Air; the Rapidity of its Motions is occaſion'd by the Declivity of the Mountains.

Wherever the Grand Helm fixeth, from that Quarter the Wind blows, untill the ſtock of Vapours be ſpent: For Inſtance,

If the Grand Helm fix upon the Mountains of *Germany*, the Second Helm fixeth upon the Gibboſity of the *Eastern* Seas; [by the Gibboſity of the Sea, I underſtand that middle Ridge where the Flux and Reflux breaketh;] the Third Helm fixeth upon *Croſsfelt*, and that Ridge of Mountains; the Fourth Helm fixeth upon *Skidday*, and that Ridge of Mountains; and ſo forward, until the Grand *Pabulum* be ſpent, and then the Wind ceaſeth, and the Air is Calm.

That diſtance between Helm and Helm we call an Arch; over which [as the Vapours riſe] the Wind blows them from Helm to Helm, one feeding and repairing another, until the Grand Stock be ſpent. And ſo on the contrary, if the Grand Helm fix upon the Mountains in *Ireland*, the Wind blows *Weſt*, forming Helms and Arches till that Stock be ſpent.

The Grand Helm is always Opake, conſiſting of all Vapour. The firſt Wind is Wet and Rainy, the Arch over-Clouded; for as the Nitrous part of the Vapour riſeth, and is Rarify'd into Wind, it driveth before it the Rain, as the Salt-petre [being fir'd] drives before it Hail-ſhot.

The Second Helm is Mix'd, being part Exhalation, and part Vapour; the upper part of the Helm being Exhalation, is Tranſlucent; this Wind is Showry, and the Arch Cloudy.

The Third Helm is Tranſlucent, being all Exhalation, the Wind Dry, the Air Clear.

The Inviſible Helms are all Exhalation,

tion, and they ſeldom riſe as high as the Tops of Mountains, but fix upon Waters, Rivers, the Tops and Sides of Hills, and high Buildings; theſe Winds are the loweſt that Blow; one may go through them, and find a Calm upon the Tops of Mountains. This is a common Obſervation made by thoſe who Live under the Mountains. The *Pabulum* of theſe Winds being ſoon ſpent, they change often.

Obſervations concerning Winds, Helms, and Arches.

1. When the Vapours and Exhalations riſe from the Waters to the Skirts of the Mountains, and there Roll and Trail to and fro, the Sphere of Rarefaction is faln; and theſe Vapours and Exhalations being Rarefy'd into Wind, it blows till the Stock be ſpent: Theſe are Spring Winds, and Summer Winds; they continue only from Ten a Clock till Three in the Afternoon, and are ſometimes carried about with the Sun: they ſeldom riſe as high as the Tops of the Mountains.

When the Vapours riſe to the Tops of the Mountains, and fix there in a Black and Opake Ledge, expect a Rainy Wind. 2.

When they are Opake at the bottom, and White at the Top, expect a Showery Rain. 3.

When the Helm is White and Tranſlucent, expect a dry Wind. 4.

When the Helms are even Ballanc'd with Vapours and Exhalations, the Wind will Blow ſometimes from both Helms, and ſometimes a third Blaſt of Wind will come from a middle Point or Quarter; and ſometimes alſo a Blaſt of Wind will come whirling down from above our Heads with great violence. 5.

When the whole Horizon is Helm'd about, expect contrary Blaſts, Whirlwinds, or Hurricanes. 6,

When the Helms riſe and cloſe up the Arch with black Clouds, expect great Rains. 7.

8. Where the Clouds begin to open and Brighten Mountain height, the Wind will blow from that Quarter; for there a new Helm is fix'd, and the Sphere of Rarefaction is faln a working.

9. In large Continents at great diſtance from the Sea, where there are not many Mountains, wherever the Wind-Helm fixeth, and the *Pabulum* is gathered, the Wind will blow from that Point or Helm for ſome Months together; Theſe we call Trade Winds.

CHAP.

CHAP. IV.

Prognoſtications of the change and alteration of Weather, from the Setting and Riſing of the Sun.

Prognoſtications of Rain, from the Setting of the Sun.

WHen the Sun Setteth in a black wateriſh Cloud, the Vapours are condens'd by the Evening Cold, and the Morning Cold raiſeth them up into the Cold Regions of the Air, where they Swim until Nine or Ten a Clock next Morning, and then their own weight cauſeth them to ſink and break into Rain. 1.

When the Sun goes down wading, or forcing, [as they call it] the Vapours are drawing down with the Evening Cold, and the next Morning Cold condenſeth them into Clouds, which the next Day fall down in Showers of Rain about Twelve a Clock. 2.

3 When the Sun Sets broad and glimmering, it Sets in thin Vapours, which the next Day will fall down in a miſling Rain.

Signs of fair Weather.

1. When the Sun Sets clear, and appears little and fiery, the Vapours are all ſpent, and you may expect a fair and hot Day to follow.

2. When the Sun Sets through thin Clouds, ſharp edged like Swords, theſe are little Wind-Helms, and you muſt expect a fair and windy Day to follow.

3. When after the Sun is Set, its Beams ſtrike the Air with a Crimſon-red, you may expect that the next Day will be Fair and Windy.

Signs of Rain from the Riſing Sun.

1. If before the Sun appears, its Riſing Beams ſtrike the Air with a Crimſon-

Red, expect Wind and Rain about Ten a Clock; for the Air is full of Vapours and Exhalations.

When the Sun Riſeth broad and glimmering, and is preſently receiv'd into a black Cloud, the Morning Cold riſeth, and takes up with it the Vapours, which fall down in great Rains. 2.

When the Sun Riſeth clear, and ſeveral little black Clouds are ready to receive it, expect a Showery Day. 3.

Signs of a fair Day, from the Riſing Sun.

If the Sun Riſe little and fiery, and the Vapours draw down to the Waters, leaving a Dew upon the Ground, theſe Vapours about Ten a Clock are Rarify'd into Wind, which continues blowing only till Three in the Afternoon, and Prognoſticate a fair Seaſon. 1.

If the Sun Riſe in thick Clouds, and appear not till until Ten a Clock, expect a clear Afternoon. 2.

2. If the Sun appear not till Twelve a Clock, expect not only a clear Afternoon, but a dry Seaſon; for the Morning Cold riſeth not.

3. The Riſing of the Morning Cold, and its lifting up the Vapours with it, is the cauſe of all the Rain we have.

FINIS

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